

## บรรณานุกรม

### ภาษาไทย

โกวิท ประวาลนฤกษ์. "ความเข้าใจพื้นฐานเกี่ยวกับโครงสร้างข้อสอบ." วารสารการวัดผลการศึกษา, 4 (กันยายน - ธันวาคม 2525) : 55 - 63.

ซัชชัย เป่าพงศ์. " การวิเคราะห์ความลำเอียงของข้อสอบจากแบบทดสอบวัดความถนัดทางการเรียนด้านคณิตศาสตร์ และภาษา ระดับชั้นมัธยมศึกษาตอนต้น." วิทยานิพนธ์ปริญญาศึกษาศาสตรมหาบัณฑิต มหาวิทยาลัยขอนแก่น, 2527.

ชูศักดิ์ ชัมภลสิทธิ์. "IRT กับผลการสอบคัดเลือก." วารสารการวัดผลการศึกษา, 4.(กันยายน - ธันวาคม 2525) : 33 - 44.

ทัศนีย์ พิรมนตรี. " การวิเคราะห์ความลำเอียงของแบบสอบวิชาคณิตศาสตร์ โครงการตรวจสอบคุณภาพการศึกษา ชั้นมัธยมศึกษาปีที่ 6 ปีการศึกษา 2526." วิทยานิพนธ์ปริญญา มหาบัณฑิต ภาควิชาวิจัยการศึกษา บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2530.

ดวงจิต อินทสุวรรณ. "Latent Trait Theory." วารสารการวัดผลการศึกษา, 3 (มกราคม - เมษายน 2525) : 51 - 69.

\_\_\_\_\_. " แนวทางการศึกษาความลำเอียงของข้อคำถาม." วารสารการวัดผลการศึกษา, 9 (พฤศจิกายน - สิงหาคม 2530) : 54-62.

สงบ ลักษณะ. "ความสามารถเกี่ยวกับการตอบข้อสอบ." วารสารการวัดผลการศึกษา,  
4 (พฤศจิกายน - สิงหาคม 2525) : 47 - 54, 88 - 93.

สำเร็จ บุญเรืองรัตน์. "การพัฒนากฎวิธีเกณฑ์เพื่อการวิเคราะห์ข้อสอบ."  
วารสารการวัดผลการศึกษา, 4 (กันยายน - ธันวาคม 2525) : 1 - 12.

สุธรรม จันทน์หอม. "วิเคราะห์ผลการสอบแบบราสซ์โมเดล." วารสารการวัดผลการศึกษา,  
4 (มกราคม - เมษายน 2526) : 45 - 61.

#### ภาษาต่างประเทศ

Allen, M.J. and Yen, W.M. Introduction to Measurement Theory. (n.p.)  
: Brooks / Cole, 1979.

Anastasi, Anne. Differential Psychology. New York : The Macmillan  
Company, 1976.

Angoff, W.H. "Use of Difficulty and Discrimination Indices for  
Detecting Item Bias." In R.A. Berk (Ed.) Handbook of  
Methods for Detecting Test Bias. Baltimore, MD : Johns  
Hopkins University Press, 1982.

Angoff, W.H., and Sharon, A.T. "The Evaluation of Differences in Test Performance of Two or More Groups." Educational and Psychological Measurement. 34 (1974) : 807 - 816.

Baker, F.B. "Advances in Item Analysis." Review of Educational Research. 47 (Winter 1977) : 151 - 178.

Berk, R.A. (Ed.). Handbook of Methods for Detecting Test Bias. Baltimore, MD : Johns Hopkins University Press, 1982.

Burrill, L.E. "Comparative Studies of Item Bias Methods."  
In R.A. Berk (Ed.) Handbook of Methods for Detecting Tests Bias. Baltimor, MD : Johns Hopkins University Press, 1982.

Chase, C.L. Measurement for Educational Evaluation. London : Addison-Wesley, 1976.

Cleary, T.A. and Hilton, T.L. "An Investigation of Item Bias."  
Educational and Psychological Measurement. 28 (1968) : 61 - 75.

Cronbach, L.J. Essentials of Psychological Testing. New York : Harper & Row, Publishers, 1970.

- Haebara, T. A Method for Investigating Item Bias Using Birnbaum's Three - parameter Logistic Model. Iowa Testing Programs Occasional Papers, The University of Iowa, 1979.
- Hambleton, R.K., and Cook, L.L. "Latent Trait Models and Their Use in the Analysis of Educational Test Data." Journal of Educational Measurement. 14 (Summer 1977) : 75 - 96.
- Hambleton, R.K., et al. "Developments in Latent Trait Theory : Models, Technical Issues, and Applications." Review of Educational Research. 48 (Fall 1978) : 467 - 510.
- Intasuwan, P. A Comparison of Three Approaches for Determining Item Bias in Cross - National Testing. Unpublished Doctoral Dissertation, The University of Pittsburgh, 1979.
- Ironson, G.H. "Use of Chi - square and Latent Trait Approaches for Detecting Item Bias." In R.A. Berk (Ed.) Handbook of Methods for Detecting Test Bias. Baltimore, MD : Johns Hopkins University Press, 1982.
- Ironson, G.H., and Craig, R. Item Bias when Amount of Bias is Varied and Score Differences Between Groups are Present. Final Report. Tampa : University of South Florida, 1982.

- Ironson, G.H., and Subkoviak, M.J. "A Comparison of Several Methods of Assessing Item Bias." Journal of Educational Measurement. 16 (1979) : 209 - 225.
- Jensen, A.R. Bias in Mental Testing. New York : The Free Press, 1980.
- Kirk, R.E. Experimental Design : Procedures for the Behavioral Sciences. Monterey, California : Brooks/Cole, 1982.
- Laksana, S. Application of Analysis of Variance Approach and Item Characteristic Curve Approach for Assessing Item Bias in the ITBS Form 7. Unpublished Doctoral Dissertation, The University of Iowa, 1979.
- Laksana, S., and Coffman, W.E. A Comparison of an ANOVA Approach and an ICC Approach for Assessing Item Bias in an Achievement Test. Iowa Testing Programs Occasional Papers, The University of Iowa, 1980.
- Lord, F.M. Applications of Item Response Theory to Practical Testing Problems. Hillsdale, N.J. : Lawrence Erlbaum Associates, 1980.
- \_\_\_\_\_. "Practical Applications of Item Characteristic Curve Theory." Journal of Educational Measurement. 14 (Summer 1977) : 117-138.

Lord, F.M., and Novick, M.R. Statistical Theory of Mental Test Scores. Reading, Massachusetts : Addison - Wesley, 1968.

Monaco, L.G. A Comparison of Three Methods of Detecting Test Item Bias. Unpublished Doctoral Dissertation, North Texas State University, 1985.

Osterlind, S.J. Test Item Bias. Beverly Hills, California : Sage Publications, Inc., 1983.

Popham, W.J. Modern Educational Measurement. Englewood Cliffs, New Jersey : Prentice - Hall, 1981.

Rudner, L.M., Geston, P.R., and Knight, D.L. "A Monte Carlo Comparison of Seven Biased Item Detection Techniques." Journal of Educational Measurement. 17 (1980 b) : 1 - 10.

Rudner, L.M., Geston, P.R., and Knight, D.L. "Biased Item Detection Techniques." Journal of Educational Measurement. 17 (1980 a) : 213 - 233.

Shepard, L.A., Camilli, G., & Averill, M. "Test Item Bias." Journal of Educational Statistics. 6(1981) : 317-375.

Subkoviak, M.J., et al. "Empirical Comparison of Selected Item Bias Detection Procedures with Bias Manipulation." Journal of Educational Measurement. 21 (Spring 1984) : 49 - 58.

Torgerson, W.S. Theory and Methods of Scaling. New York : John and Wiley, 1958.

Warm, T.A. A Primer of Item Response Theory. Oklahoma : U.S. Coast Guard Institute, 1979.

Wood, R., Wingersky, M.S. and Lord, F.M. "LOGIST : A Computer Program for Estimating Examinee Ability and Item Characteristic Curve Parameter." Research Memorandum. (June 1976) : 1 - 29.

ကမ္ဘာ့အဖွဲ့



## ภาคผนวก ก.

ตาราง 51 แสดงค่าพารามิเตอร์ของข้อสอบจากแบบสอบฉบับที่ 1

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
1	1.1017	0.9673	0.4610	0.1323	-0.1745	0.1410
3	0.5244	-2.9006	0.1601	0.3787	-3.8294	0.1410
5	0.6864	0.1131	0.1601	0.5564	0.2744	0.1410
6	0.5564	-2.1255	0.1601	0.4652	-2.2324	0.1410
7	0.3893	-1.5883	0.1601	0.2918	-2.2934	0.1410
13	0.7020	1.7472	0.2584	0.3549	1.8641	0.0284
14	0.6765	-0.3445	0.1601	0.5207	-0.3245	0.1410
15	0.7298	1.0461	0.0463	0.5006	1.2885	0.0161
18	0.4992	0.0439	0.1601	0.4125	-0.1730	0.1410
20	0.2483	-0.1428	0.1601	0.3780	-0.0525	0.1410
22	0.1044	-2.5508	0.1601	0.2031	-0.9948	0.1410
23	0.6856	0.5615	0.1601	0.8043	0.2574	0.1410
25	0.1803	-2.7830	0.1601	0.1231	-2.6540	0.1410
27	0.2307	0.5450	0.1601	1.3182	0.8002	0.5000
30	0.2224	-3.0807	0.1601	0.2840	-3.7918	0.1410
32	0.1732	-0.6160	0.1601	0.6994	1.3372	0.5000

ตาราง 51 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
33	0.5203	0.0011	0.1601	0.4301	-0.2626	0.1410
34	0.3302	-0.9267	0.1601	0.4217	-0.7866	0.1410
38	0.6519	-1.7986	0.1601	0.8835	-1.3968	0.1410
39	0.4151	-1.7233	0.1601	0.5068	-1.5652	0.1410
41	0.8077	1.8020	0.2949	0.4178	2.0795	0.1410
42	0.1510	-1.8520	0.1601	0.2405	-1.5391	0.1410
43	0.3576	0.4652	0.1601	0.2529	1.1493	0.1410
44	0.3935	-0.5249	0.1601	0.3851	-0.1101	0.1410
46	0.2934	-3.4609	0.1601	0.3583	-3.0557	0.1410
47	0.3431	-3.2671	0.1601	0.4493	-2.5637	0.1410
48	0.2097	1.7683	0.1601	0.6294	2.3294	0.2997
49	0.5491	-1.5745	0.1601	0.6947	-1.5820	0.1410
50	0.1488	0.0638	0.1601	0.1288	-0.1723	0.1410
52	0.5933	-1.7336	0.1601	0.6517	-2.0069	0.1410
53	0.4605	-1.4408	0.1601	0.3809	-2.2280	0.1410
54	0.4144	-3.0123	0.1601	0.5292	-2.5502	0.1410
55	0.4226	-2.5963	0.1601	0.3256	-3.4118	0.1410
58	1.2829	2.4533	0.3204	1.0821	2.2019	0.2521

ตาราง 51 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
59	0.2344	-2.2002	0.1601	0.3518	-1.3471	0.1410
60	0.3287	0.4885	0.1601	0.3932	0.0450	0.1410
61	0.3311	-2.9560	0.1601	0.3312	-3.2305	0.1410
63	0.0588	0.0341	0.1601	0.1974	-0.5218	0.1410
64	0.9844	-0.6369	0.1601	0.7118	-0.8746	0.1410
65	0.3687	-0.7949	0.1601	0.3110	-0.7372	0.1410
66	0.6873	-0.1085	0.1601	0.6676	0.1692	0.1410
67	0.4205	-2.3991	0.1601	0.4534	-1.9463	0.1410
68	0.2938	-1.4975	0.1601	0.2389	-2.6368	0.1410
69	0.2502	1.4623	0.1601	0.2484	0.9485	0.1410
71	0.4086	2.9885	0.0000	0.3591	3.0405	0.0000
73	0.7173	-1.2138	0.1601	0.6694	-1.5352	0.1410
74	0.9248	2.4498	0.3843	0.0895	2.4187	0.1410
76	0.7566	2.6405	0.3083	0.2349	2.8412	0.1410
77	0.5047	-0.9292	0.1601	0.5423	-0.8788	0.1410
78	0.3777	-3.2101	0.1601	0.4779	-2.9199	0.1410
79	0.4513	-0.5401	0.1601	0.3982	-0.6818	0.1410
80	0.6027	0.0716	0.1601	0.4080	-0.4244	0.1410
82	0.2041	0.4088	0.1601	0.1354	0.3664	0.1410
84	0.5442	0.6526	0.1601	0.5171	1.0573	0.1410

ตาราง 51 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
85	0.3208	-2.4211	0.1601	0.3725	-2.4283	0.1410
88	0.4101	-0.5569	0.1601	0.2947	0.3787	0.1410
89	0.2735	-1.7555	0.1601	0.2832	-2.8930	0.1410
90	0.3249	-2.5347	0.1601	0.2604	-1.2987	0.1410
91	0.4104	-2.7682	0.1601	0.4561	-2.2217	0.1410
92	0.5430	-3.5244	0.1601	0.4699	-3.8800	0.1410
95	0.9812	1.7074	0.5000	0.0859	-1.4801	0.1410
97	1.2060	2.4202	0.3971	0.2915	3.7300	0.3132

ตาราง 52 แสดงค่าพารามิเตอร์ของข้อสอบจากแบบสอบฉบับที่ 2

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
1	0.3193	1.7906	0.1341	0.2191	2.5568	0.1392
2	1.1450	0.7486	0.4248	1.6536	1.0684	0.3407
3	0.8929	-0.3870	0.1341	0.9202	-0.2711	0.1392
4	0.5673	-2.9634	0.1341	0.6720	-2.4490	0.1392
5	0.8327	1.3508	0.1341	0.5730	1.9539	0.1123
6	0.5857	-0.0791	0.1341	0.7634	0.8466	0.3221
7	0.8571	1.0096	0.4770	0.7762	1.2602	0.4262
8	0.5305	-0.1034	0.1341	0.2842	0.2655	0.1392
9	0.3367	-2.0482	0.1341	0.2832	-1.9784	0.1392
10	0.5833	1.7034	0.0648	0.6529	1.8208	0.0950
11	0.8362	2.4213	0.2207	1.1964	2.9782	0.2106
12	0.8326	-1.7761	0.1341	0.6116	-2.0216	0.1392
13	0.3498	1.7733	0.1341	0.2909	2.0060	0.1392
14	0.6718	0.0897	0.1341	0.9376	0.6731	0.1463
15	0.2705	-0.0258	0.1341	0.2884	0.2142	0.1392
17	0.4577	2.4065	0.1781	0.5961	1.7866	0.1081
19	0.1593	-1.0322	0.1341	0.1558	-0.4256	0.1392
20	0.2162	-1.5922	0.1341	0.1855	-2.5362	0.1392
21	0.3486	-0.7349	0.1341	0.3365	-0.4205	0.1392
22	0.5116	1.8827	0.1465	0.4007	2.1958	0.1392
23	0.7585	-1.4218	0.1341	0.6484	-1.6815	0.1392

ตาราง 52 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
24	0.8103	1.5847	0.3849	0.8099	1.8726	0.3686
26	0.6086	-1.2083	0.1341	0.6621	-1.1861	0.1392
27	0.5666	1.5424	0.0403	0.4543	1.6228	0.0312
28	0.8728	0.5382	0.2464	1.0494	0.7968	0.1477
30	0.3668	0.9976	0.1341	0.3531	1.8213	0.1392
31	1.2467	1.0246	0.5000	0.4219	0.5676	0.1392
33	0.7566	1.3245	0.5000	0.2136	-2.4908	0.1392
34	0.5372	-2.6292	0.1341	0.4516	-2.7654	0.1392
36	0.6412	-0.0327	0.1341	0.4744	0.4061	0.1392
37	0.7594	-3.1404	0.1341	0.8872	-2.7191	0.1392
38	0.4832	0.5037	0.1341	0.3527	0.8451	0.1392
39	0.3399	-0.1387	0.1341	0.3933	-0.1614	0.1392
40	0.8059	-0.6531	0.1341	0.6369	-0.6500	0.1392
41	0.4579	-1.0645	0.1341	0.5835	-0.6158	0.1392
42	0.0100	0.5204	0.1341	0.0100	0.3351	0.1392
43	0.3494	-0.7571	0.1341	0.4636	-0.8555	0.1392
44	0.2921	-2.4333	0.1341	0.2832	-2.3420	0.1392
45	0.5060	-1.1138	0.1341	0.6013	-0.8480	0.1392
46	0.5035	-2.5350	0.1341	0.5368	-2.3248	0.1392
47	0.4813	-3.7871	0.1341	0.6540	-2.8055	0.1392
48	0.3421	-1.9269	0.1341	0.3700	-1.9042	0.1392

ตาราง 52 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
50	0.6033	0.4261	0.1341	0.3877	0.6126	0.1392
51	0.2517	1.2633	0.1341	0.2532	0.9577	0.1392
58	0.4538	2.8615	0.1443	0.7251	2.0697	0.1276
59	1.0048	2.2727	0.0853	0.6362	2.9160	0.0506
60	0.4423	-0.6214	0.1341	0.3796	-0.9015	0.1392
61	0.3099	-0.7888	0.1341	0.2967	-0.9579	0.1392
66	0.3660	-2.2069	0.1341	0.3781	-2.5744	0.1392
67	0.4458	1.1375	0.1341	0.6809	2.0816	0.2820
72	0.4695	-2.6070	0.1341	0.7454	-1.8547	0.1392
75	0.3637	-1.0867	0.1341	0.3529	-0.8978	0.1392
77	0.4647	-1.9676	0.1341	0.4740	-1.7726	0.1392
78	0.2527	1.1031	0.1341	0.2222	0.4359	0.1392
79	0.2840	-0.6731	0.1341	0.2224	-1.3625	0.1392
80	0.2049	-2.4524	0.1341	0.2715	-2.0181	0.1392
81	2.8101	1.3477	0.2450	2.6888	1.9288	0.2478
84	0.4174	1.1790	0.1341	0.3948	1.2951	0.1392
86	0.2546	-2.0133	0.1341	0.2808	-2.1457	0.1392
87	0.6252	3.3726	0.1292	1.0352	2.8005	0.1290
88	0.7926	1.1213	0.0659	0.9382	1.6321	0.0808
90	0.6739	2.5739	0.1450	0.9438	2.7953	0.1564
91	0.2512	1.1012	0.1341	0.3260	1.0242	0.1392
92	0.0447	-1.3991	0.1341	0.1187	0.3002	0.1392

## ตาราง 52 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
95	0.9922	1.3091	0.3833	0.7228	1.1212	0.2842
96	0.2284	-0.5012	0.1341	0.1013	0.7264	0.1392
97	0.6872	-0.9163	0.1341	0.6507	-0.8485	0.1392
99	0.4058	-2.1084	0.1341	0.3799	-2.6451	0.1392



ตาราง 53 แสดงค่าพารามิเตอร์ของข้อสอบจากแบบสอบฉบับที่ 3

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
1	0.1760	1.8228	0.0966	0.1189	3.0100	0.1178
2	0.6110	0.2627	0.0966	0.2611	0.1897	0.1178
3	0.4485	0.6916	0.0966	0.4232	0.6237	0.1178
4	0.8872	1.2105	0.1590	0.4145	1.4375	0.1178
5	0.6664	-0.7584	0.0966	0.1732	-3.1188	0.1178
7	0.4257	-0.4516	0.0966	0.3795	-0.6926	0.1178
9	0.2014	0.7934	0.0966	0.2432	0.2321	0.1178
10	0.4173	-1.3606	0.0966	0.2103	-2.0135	0.1178
11	0.5705	0.3803	0.0966	0.4649	0.2397	0.1178
12	0.8528	1.0194	0.1670	0.3160	1.4699	0.1178
13	1.3826	1.7879	0.0698	0.8244	2.2362	0.0459
14	0.4826	0.5353	0.0966	0.5808	1.2340	0.2568
15	0.6094	-0.7746	0.0966	0.4676	-0.8918	0.1178
16	0.5524	-0.9811	0.0966	0.3688	-1.6855	0.1178
17	0.7644	-1.2757	0.0966	0.4708	-1.6145	0.1178
20	0.1261	-2.7542	0.0966	0.2617	-1.6979	0.1178
23	0.2950	-1.3766	0.0966	0.2155	-2.2652	0.1178
25	0.0719	-1.0952	0.0966	0.1321	-3.8714	0.1178

ตาราง 53 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
26	0.4618	1.4712	0.0966	0.3686	1.5050	0.1178
27	0.3299	2.2549	0.0966	0.3432	3.9096	0.1219
28	0.2578	-2.0446	0.0966	0.2574	-0.4201	0.1178
31	0.3120	-1.5706	0.0966	0.2058	-2.3528	0.1178
32	0.2600	2.1598	0.0966	0.2294	3.0318	0.1178
33	0.3674	1.6450	0.0966	0.2771	1.4757	0.1178
35	0.3523	1.9921	0.0000	0.9654	2.1119	0.1164
37	0.1892	0.3048	0.0966	0.2890	0.4447	0.1178
39	0.3342	-1.1216	0.0966	0.4706	-0.7879	0.1178
42	0.3529	2.2738	0.0966	0.2813	2.7384	0.1178
43	0.2556	-0.6288	0.0966	0.2792	-1.2124	0.1178
44	0.3920	-2.4365	0.0966	0.5742	-2.1379	0.1178
45	0.4643	-3.2329	0.0966	0.4218	-3.6534	0.1178
46	0.2579	-0.5797	0.0966	0.2944	-0.0807	0.1178
47	0.1576	-1.1141	0.0966	0.1403	-1.4454	0.1178
48	0.2142	-0.0373	0.0966	0.1792	-0.3058	0.1178
49	0.4523	-1.5375	0.0966	0.4321	-1.8819	0.1178
50	0.2556	-1.0405	0.0966	0.1941	-1.1976	0.1178
52	0.2386	-2.0761	0.0966	0.4236	-1.0033	0.1178
53	1.1797	1.7844	0.1951	0.7937	1.7120	0.1776

ตาราง 53 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
54	0.2833	-0.1586	0.0966	0.3312	-0.0100	0.1178
55	0.2210	-0.4771	0.0966	0.4214	-0.1265	0.1178
57	0.8013	2.6623	0.5000	0.1788	-0.0544	0.1178
58	0.1896	3.8759	0.0966	0.6250	1.9177	0.1081
62	0.1564	1.2840	0.0966	0.1846	2.7543	0.1178
63	0.4265	2.3534	0.0542	0.3859	2.8119	0.1178
64	0.2212	2.2698	0.0966	0.1861	3.3324	0.1178
65	0.2813	1.9419	0.0966	0.3914	1.2561	0.2197
67	0.8564	3.6628	0.2076	1.0056	2.6586	0.2197
69	0.4440	-1.6220	0.0966	0.4678	-1.2361	0.1178
70	0.1520	1.5513	0.0966	0.2752	3.0450	0.1178
71	0.0521	1.6255	0.0966	0.1294	-0.5517	0.1178
72	0.3701	3.5020	0.0828	0.7661	2.3339	0.0917
73	0.4909	2.4728	0.2784	0.2792	1.8668	0.1178
75	0.3019	3.6388	0.0550	0.3231	2.7517	0.0000
76	0.1974	3.1888	0.0966	0.2195	1.9511	0.1178
77	0.1428	1.1150	0.0966	0.2793	0.0401	0.1178
80	0.9182	1.2150	0.4412	0.2523	-0.4900	0.1178
81	0.5059	-1.1008	0.0966	0.7394	-1.2532	0.1178
88	0.1110	3.9592	0.0966	0.2162	1.7649	0.1178

ตาราง 53 (ต่อ)

ชื่อ	ชาย			หญิง		
	a	b	c	a	b	c
91	0.2855	-0.9396	0.0966	0.3459	-0.4242	0.1178
93	0.2900	-1.0895	0.0966	0.3285	-1.0761	0.1178
97	3.0031	2.0876	0.3429	0.3513	1.0019	0.1178
100	0.3570	-0.4758	0.0966	0.5072	-0.2884	0.1178

ตาราง 54 แสดงค่าพารามิเตอร์ของข้อสอบจากแบบสอบฉบับที่ 4

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
1	0.4205	-1.2516	0.0922	0.3766	-1.1429	0.1052
3	0.7407	-2.1983	0.0922	0.6260	-2.1359	0.1052
4	1.0529	-0.1594	0.2272	0.9522	0.2619	0.1726
6	0.4131	-0.0606	0.0922	0.4904	0.2493	0.1052
7	0.5038	-1.8685	0.0922	0.4002	-1.8414	0.1052
8	0.5076	-0.3786	0.0922	0.6134	0.1894	0.1052
9	0.4710	-1.8929	0.0922	0.3699	-1.8605	0.1052
10	0.4194	0.0138	0.0922	0.5065	0.1791	0.1052
11	0.6291	-1.2048	0.0922	0.5811	-0.9074	0.1052
12	1.1902	1.2806	0.2581	0.7785	1.8513	0.2521
13	0.8489	1.6692	0.1205	0.5874	2.3696	0.0738
14	0.6835	0.5455	0.0922	0.4958	0.9753	0.1052
15	0.9140	0.7380	0.1652	0.5650	1.2187	0.1052
16	2.3533	1.5347	0.2158	1.0606	2.0548	0.1754
17	0.7328	3.0418	0.1343	0.5855	3.4818	0.1059
18	0.4543	2.7700	0.0604	0.6367	2.3424	0.0995
20	0.6086	2.2148	0.0751	2.2210	2.3467	0.1210
23	0.7333	1.9486	0.0567	0.4182	3.3234	0.0376
24	0.2878	0.1679	0.0922	0.2152	0.7281	0.1052

ตาราง 54 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
26	0.3426	0.4803	0.0922	0.3789	0.6759	0.1052
28	0.2921	-0.9152	0.0922	0.2784	-0.9119	0.1052
29	0.0704	0.3924	0.0922	0.1152	-1.5723	0.1052
31	0.4330	-2.0673	0.0922	0.3592	-2.5087	0.1052
35	0.2478	-0.7245	0.0922	0.2044	-0.2541	0.1052
36	0.3517	-2.5481	0.0922	0.3651	-2.0901	0.1052
38	0.3464	-1.7407	0.0922	0.3653	-1.9972	0.1052
40	0.3266	-3.0195	0.0922	0.3423	-3.3705	0.1052
41	0.1222	-0.4601	0.0922	0.1246	-0.7559	0.1052
44	0.2408	-2.4090	0.0922	0.2740	-2.3289	0.1052
48	0.1846	0.5007	0.0922	0.1333	1.6022	0.1052
50	0.1410	0.6684	0.0922	0.1631	0.3721	0.1052
51	0.1314	2.0486	0.0922	0.2450	0.9056	0.1052
52	0.4473	-1.6111	0.0922	0.1940	-3.5970	0.1052
53	0.3913	-0.6320	0.0922	0.6221	-0.7373	0.1052
56	0.5234	-1.2491	0.0922	0.6996	-0.7922	0.1052
57	0.5353	0.0791	0.0922	0.5403	0.5696	0.1052
58	0.6154	-0.7933	0.0922	0.6543	-0.6148	0.1052
59	0.2852	0.9124	0.0922	0.3274	0.5169	0.1052
60	0.6464	1.6561	0.1699	0.3075	2.5606	0.1052
61	0.2841	0.5855	0.0922	0.3263	0.4834	0.1052

ตาราง 54 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
62	0.2931	2.9963	0.0922	0.3355	2.8078	0.1052
63	0.0587	-3.9741	0.0922	0.1268	-1.3042	0.1052
64	0.4931	2.2026	0.3356	0.0801	3.4125	0.1052
65	0.0358	-3.7098	0.0922	0.1093	-2.1449	0.1052
66	0.8742	1.3380	0.2099	0.5176	1.0734	0.0320
67	0.3815	0.9690	0.0922	0.4856	0.7507	0.1052
69	1.3674	1.3979	0.1887	0.9615	1.7147	0.1739
71	0.6659	1.0097	0.0784	0.6069	1.2693	0.0461
72	0.6318	2.2779	0.1632	0.5687	2.6609	0.1739
73	1.0060	1.4936	0.2482	0.3733	1.4820	0.1052
75	0.4269	1.9990	0.0000	0.3493	2.3295	0.0000
76	0.2959	-1.5907	0.0922	0.3749	-1.1226	0.1052
77	0.0983	1.9114	0.0922	0.1540	3.3588	0.1052
79	0.4318	0.1570	0.0922	0.4087	0.1999	0.1052
80	0.4567	-1.6357	0.0922	0.3778	-1.8266	0.1052
82	0.4586	-1.1654	0.0922	0.4889	-1.4362	0.1052
83	0.2403	1.9126	0.0922	0.7929	2.7046	0.2775
85	0.4961	0.9704	0.0922	0.6108	0.8657	0.1052
86	0.2357	1.6435	0.0922	0.6978	3.1593	0.3521
88	0.5577	0.5325	0.0922	0.4185	0.9092	0.1052
89	0.5584	1.7456	0.1750	0.3150	1.8365	0.1052

ตาราง 54 (ต่อ)

ข้อ	ชาย			หญิง		
	a	b	c	a	b	c
90	0.4422	-0.6737	0.0922	0.3422	-0.7123	0.1052
91	0.5490	-0.1794	0.0922	0.6434	0.8287	0.2492
92	0.4734	1.2020	0.0922	0.5029	1.5935	0.1052
93	0.4321	-0.4252	0.0922	0.4861	-0.0476	0.1052
94	0.5676	-0.6264	0.0922	0.5981	-0.0814	0.1052
95	0.3753	0.3297	0.0922	0.4109	0.5308	0.1052
97	0.2466	1.4619	0.0922	0.1902	2.3299	0.1052
98	0.2612	2.9103	0.0922	0.2927	3.1718	0.1052
99	0.5070	0.4949	0.0922	0.2991	0.3914	0.1052
100	0.7990	1.0901	0.4380	0.3611	-0.3939	0.1052



ตาราง 55 แสดงค่าดัชนีความลำเอียงของข้อสอบ 2 แบบฝ่ายวิธีโค้งลักษณะข้อสอบ  
ที่มีพารามิเตอร์ 3 ตัว จากแบบสอบฉบับที่ 1

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่จำ
1	-.3960 <sup>a</sup>	.6187 <sup>a</sup>	/
3	.0915	.1550	
5	-.1772	.1882	
6	-.0649	.1018	
7	.1814	.2044 <sup>a</sup>	
13	-.7552 <sup>a</sup>	.7552 <sup>a</sup>	/
14	-.0866	.1979	
15	-.2083 <sup>a</sup>	.2846 <sup>a</sup>	/
18	.0904	.1590	
20	-.0908	.3423 <sup>a</sup>	
22	-.2020 <sup>a</sup>	.3327 <sup>a</sup>	/
23	.1709	.2495 <sup>a</sup>	
25	-.3377 <sup>a</sup>	.3377 <sup>a</sup>	/
27	.8624 <sup>a</sup>	.8624 <sup>a</sup>	/
30	.4340 <sup>a</sup>	.4340 <sup>a</sup>	/
32	.1889	.3063 <sup>a</sup>	
33	.1236	.1750	
34	-.0560	.2131 <sup>a</sup>	
38	-.2426 <sup>a</sup>	.2994 <sup>a</sup>	/

ตาราง 55 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
39	-.0311	.1544	
41	-.5932 <sup>■</sup>	.5932 <sup>■</sup>	/
42	.0869	.2545 <sup>■</sup>	
43	-.3287 <sup>■</sup>	.3494 <sup>■</sup>	/
44	-.3209 <sup>■</sup>	.3209 <sup>■</sup>	/
46	-.0001	.0943	
47	-.1129	.1740	
48	-.2461 <sup>■</sup>	.3438 <sup>■</sup>	/
49	.0560	.1718	
50	.0090	.0518	
52	.1886	.1886	
53	.3063 <sup>■</sup>	.3094 <sup>■</sup>	
54	.0638	.1385	
55	.1064	.1606	
58	-.1827	.3114 <sup>■</sup>	
59	-.1977	.3183 <sup>■</sup>	
60	.1932	.2387 <sup>■</sup>	
61	.0848	.0848	
63	.1548	.4466 <sup>■</sup>	
64	.1216	.2373 <sup>■</sup>	
65	-.1285	.1463	

ตาราง 55 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
66	-.2790 <sup>■</sup>	.2790 <sup>■</sup>	/
67	-.2210 <sup>■</sup>	.2210 <sup>■</sup>	/
68	.3195 <sup>■</sup>	.3195 <sup>■</sup>	/
69	.1674	.1674	
71	.0934	.0965	
73	.1855	.1855	
74	.1797	.4461 <sup>■</sup>	
76	-.1536	.2628 <sup>■</sup>	
77	-.0604	.0891	
78	.0381	.1046	
79	.0198	.0883	
80	.2803 <sup>■</sup>	.3881 <sup>■</sup>	/
82	.0341	.1911	
84	-.3494 <sup>■</sup>	.3494 <sup>■</sup>	/
86	.0866	.1071	
88	-.6269 <sup>■</sup>	.6269 <sup>■</sup>	/
89	.4797 <sup>■</sup>	.4797 <sup>■</sup>	/
90	-.7483 <sup>■</sup>	.7483 <sup>■</sup>	/
91	-.2183 <sup>■</sup>	.2183 <sup>■</sup>	/
92	.0065	.0404	
95	.0051	.4833 <sup>■</sup>	

## ตาราง 55 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ไว้ในการศึกษาวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
97	-0.2471 <sup>a</sup>	.3055 <sup>a</sup>	/
รวม	23 (37.09%)	37 (59.68%)	23 (37.09%)

ตาราง 56 แสดงค่าดัชนีความลำเอียงร่องข้อสอบ 2 แบบด้วยวิธีโค้งลักษณะข้อสอบ  
ที่มีพารามิเตอร์ 3 ตัว จากแบบสอนฉบับที่ 2

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
1	-.0431	.2389 <sup>■</sup>	
2	-.5285 <sup>■</sup>	.5398 <sup>■</sup>	/
3	-.0834	.0835	
4	-.1591	.1681	
5	-.4119 <sup>■</sup>	.4119 <sup>■</sup>	/
6	-.0443	.3878 <sup>■</sup>	
7	-.3255 <sup>■</sup>	.3255 <sup>■</sup>	/
8	-.2045 <sup>■</sup>	.5505 <sup>■</sup>	/
9	-.1425	.1527	
10	.0055	.0807	
11	-.4332 <sup>■</sup>	.4332 <sup>■</sup>	/
12	.0654	.1978	
13	.0240	.1304	
14	-.4538 <sup>■</sup>	.4666 <sup>■</sup>	/
15	-.1134	.1134	
17	-.1072	.3904 <sup>■</sup>	
19	-.1889	.1889	
20	-.2302 <sup>■</sup>	.2302 <sup>■</sup>	/
21	-.1825	.1825	

ตาราง 56 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
22	-0.0657	.1467	
23	.1522	.1762	
24	-0.2275 <sup>■</sup>	.2275 <sup>■</sup>	/
26	.0146	.0588	
27	.0157	.1507	
28	-0.5712 <sup>■</sup>	.5728 <sup>■</sup>	/
30	-0.4312 <sup>■</sup>	.4312 <sup>■</sup>	/
31	-0.9584 <sup>■</sup>	.9584 <sup>■</sup>	/
33	.5513 <sup>■</sup>	.6071 <sup>■</sup>	/
34	-0.0436	.0854	
36	-0.3026 <sup>■</sup>	.3738 <sup>■</sup>	/
37	-0.1224	.1266	
38	-0.1339	.2961 <sup>■</sup>	
39	.0372	.1174	
40	-0.0150	.1918	
41	-0.2539 <sup>■</sup>	.2973 <sup>■</sup>	/
42	.0194	.0194	
43	.1550	.2486 <sup>■</sup>	
44	-0.0556	.0556	
45	.1388	.1836	
46	-0.0676	.0718	

ตาราง 56 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
47	-.1810	.2017 <sup>■</sup>	
48	.0468	.0579	
50	-.0459	.3909 <sup>■</sup>	
51	.1601	.1601	
58	.0875	.3378 <sup>■</sup>	
59	-.3614 <sup>■</sup>	.3614 <sup>■</sup>	/
60	.1551	.1846	
61	.0899	.0899	
66	.2092 <sup>■</sup>	.2092 <sup>■</sup>	/
67	-.0842	.4000 <sup>■</sup>	
72	-.2042 <sup>■</sup>	.3287 <sup>■</sup>	/
75	-.1120	.1120	
77	-.0977	.0977	
78	.3588 <sup>■</sup>	.3588 <sup>■</sup>	/
79	.2484 <sup>■</sup>	.2646 <sup>■</sup>	/
80	.0373	.1561	
81	-.4237 <sup>■</sup>	.4404 <sup>■</sup>	/
84	-.0287	.0626	
86	.1363	.1363	
87	.0156	.1422	
88	-.3972 <sup>■</sup>	.4156 <sup>■</sup>	

## ตาราง 56 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
90	-.1940	.2197 <sup>๒</sup>	
91	-.0443	.1778	
92	-.1979	.2787 <sup>๒</sup>	
95	-.0261	.2664 <sup>๒</sup>	
96	-.3696 <sup>๒</sup>	.4762 <sup>๒</sup>	/
97	-.0509	.0642	
99	.2270 <sup>๒</sup>	.2270 <sup>๒</sup>	/
รวม	23 (33.82%)	35 (51.47%)	23 (33.82%)



ตาราง 57 แสดงค่าดัชนีความลำเอียงของข้อสอบ 2 แบบด้วยวิธีโค้งลักษณะ  
ข้อสอบที่มีนารามิเตอร์ 3 ตัว จากแบบสอเลขที่ 3

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
1	-.0170	.1885	
2	.1831	.7658 <sup>๙</sup>	
3	.1357	.1369	
4	-.1033	.4418 <sup>๙</sup>	
5	.5072 <sup>๙</sup>	1.0657 <sup>๙</sup>	/
7	.1937	.2018 <sup>๙</sup>	
9	.2880 <sup>๙</sup>	.2880 <sup>๙</sup>	/
10	-.0032	.4797 <sup>๙</sup>	
11	.1957	.2614 <sup>๙</sup>	
12	-.1692	.6321 <sup>๙</sup>	
13	-.3641 <sup>๙</sup>	.3772 <sup>๙</sup>	/
14	.0790	.2828 <sup>๙</sup>	
15	.0749	.2563 <sup>๙</sup>	
16	.3371 <sup>๙</sup>	.4465 <sup>๙</sup>	/
17	.1158	.3941 <sup>๙</sup>	
20	.1566	.3765 <sup>๙</sup>	
23	.2486 <sup>๙</sup>	.2940 <sup>๙</sup>	/
25	.9345 <sup>๙</sup>	.9345 <sup>๙</sup>	/
26	.1801	.2423 <sup>๙</sup>	

ตาราง 57 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
27	-.5840 <sup>a</sup>	.5840 <sup>a</sup>	/
28	-.7427 <sup>a</sup>	.7427 <sup>a</sup>	/
31	.1124	.2869 <sup>a</sup>	
32	-.1567	.1806	
33	.3381 <sup>a</sup>	.3490 <sup>a</sup>	/
35	-.0585	.4138 <sup>a</sup>	
37	-.0585	.2676 <sup>a</sup>	
39	-.0519	.2732 <sup>a</sup>	
42	.0650	.1816	
43	.3828 <sup>a</sup>	.3828 <sup>a</sup>	/
44	.1037	.2244 <sup>a</sup>	
45	.0969	.0993	
46	-.1912	.1912	
47	.1158	.1164	
48	.1621	.1750	
49	-.2249 <sup>a</sup>	.2249 <sup>a</sup>	/
50	.0103	.1851	
52	-.2232 <sup>a</sup>	.4522 <sup>a</sup>	/
53	.0099	.1851	
54	-.0189	.1044	
55	-.0677	.4893 <sup>a</sup>	

ตาราง 57 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใส่ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
57	.0255	.3275 <sup>a</sup>	
58	-.0242	.6445 <sup>a</sup>	
62	-.5157 <sup>a</sup>	.5157 <sup>a</sup>	/
63	.1510	.2411 <sup>a</sup>	
64	-.1429	.1735	
65	.2739 <sup>a</sup>	.2962 <sup>a</sup>	/
67	.3656 <sup>a</sup>	.3656 <sup>a</sup>	/
69	-.1913	.1913	
70	-.8923 <sup>a</sup>	.8923 <sup>a</sup>	/
71	-.4120 <sup>a</sup>	.4196 <sup>a</sup>	/
72	.1281	.3348 <sup>a</sup>	
73	-.0862	.1810	
75	.0455	.2101 <sup>a</sup>	
76	.4633 <sup>a</sup>	.4633 <sup>a</sup>	/
77	.3914 <sup>a</sup>	.4877 <sup>a</sup>	/
80	-.0676	.3975 <sup>a</sup>	
81	.2609 <sup>a</sup>	.3298 <sup>a</sup>	/
88	.2485 <sup>a</sup>	.3370 <sup>a</sup>	/
91	-.1946	.2134 <sup>a</sup>	
93	.0931	.1029	

## ตาราง 57 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
97	.0730	.7409 <sup>a</sup>	
100	-.0268	.2876 <sup>a</sup>	
รวม	21 (33.87%)	47 (75.81%)	21 (33.87%)

ตาราง 58 แสดงค่าดัชนีความลำเอียงของข้อสอบ 2 แบบด้วยวิธีโค้งลักษณะข้อสอบ  
ที่มีนารามิเตอร์ 3 ตัว จากแบบสอเลขที่ 4

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
1	-.0903	.1183	
3	-.1010	.1183	
4	-.4990 <sup>a</sup>	.4990 <sup>a</sup>	/
6	-.1931	.2133 <sup>a</sup>	
7	-.1298	.1852	
8	-.4111 <sup>a</sup>	.4113 <sup>a</sup>	/
9	-.1461	.1977	
10	-.0887	.1698	
11	-.2250 <sup>a</sup>	.2250 <sup>a</sup>	/
12	-.3527 <sup>a</sup>	.3647 <sup>a</sup>	/
13	-.5575 <sup>a</sup>	.5575 <sup>a</sup>	/
14	-.2292 <sup>a</sup>	.3787 <sup>a</sup>	/
15	-.5298 <sup>a</sup>	.5298 <sup>a</sup>	/
16	-.5362 <sup>a</sup>	.5362 <sup>a</sup>	/
17	-.2024 <sup>a</sup>	.2024 <sup>a</sup>	/
18	.2143 <sup>a</sup>	.2143 <sup>a</sup>	/
20	-.1818	.4958 <sup>a</sup>	
23	-.5088 <sup>a</sup>	.5088 <sup>a</sup>	/
24	-.1897	.2663 <sup>a</sup>	

ตาราง 58 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
26	-.1040	.1096	
28	.0126	.0455	
29	.5011 <sup>■</sup>	.5011 <sup>■</sup>	/
31	.1181	.1640	
35	-.2181 <sup>■</sup>	.2249 <sup>■</sup>	/
36	-.1858	.1858	
38	.1991	.1991	
40	.1959	.1959	
41	.1205	.1205	
44	.0906	.0969	
48	-.2267 <sup>■</sup>	.2499 <sup>■</sup>	/
50	.1169	.1171	
51	.1849	.3351 <sup>■</sup>	
52	.2469 <sup>■</sup>	.5652 <sup>■</sup>	/
53	.2071 <sup>■</sup>	.4137 <sup>■</sup>	/
56	-.2584 <sup>■</sup>	.3262 <sup>■</sup>	/
57	-.3444 <sup>■</sup>	.3444 <sup>■</sup>	/
58	-.1055	.1071	
59	.2337 <sup>■</sup>	.2337 <sup>■</sup>	/
60	-.3512 <sup>■</sup>	.3896 <sup>■</sup>	/
61	.0731	.1061	

ตาราง 58 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
62	.0227	.0428	
63	-.1276	.2390 <sup>■</sup>	
64	-.1504	.3906 <sup>■</sup>	
65	.2488 <sup>■</sup>	.3031 <sup>■</sup>	/
66	-.4026 <sup>■</sup>	.4135 <sup>■</sup>	/
67	.1268	.2057 <sup>■</sup>	
69	-.2769 <sup>■</sup>	.2788 <sup>■</sup>	/
71	-.3177 <sup>■</sup>	.3177 <sup>■</sup>	/
72	-.0922	.1514	
73	-.2884 <sup>■</sup>	.4404 <sup>■</sup>	/
75	-.0423	.1544	
76	-.1219	.2033 <sup>■</sup>	
77	-.6027 <sup>■</sup>	.6027 <sup>■</sup>	/
79	.0138	.0687	
80	.0290	.1491	
82	.2386 <sup>■</sup>	.2386 <sup>■</sup>	/
83	-.2076 <sup>■</sup>	.3709 <sup>■</sup>	/
85	.0775	.1554	
86	-.0527	.4204 <sup>■</sup>	
88	-.1656	.3214 <sup>■</sup>	
89	-.0371	.2227 <sup>■</sup>	

ตาราง 58 (ต่อ)

ข้อ	ดัชนีความลำเอียง ที่ใช้ในการวิจัย	ดัชนีความลำเอียง ที่เสนอแนะ	ข้อที่ซ้ำ
90	-.0082	.2310 <sup>a</sup>	
91	-.2445 <sup>a</sup>	.4362 <sup>a</sup>	/
92	-.2417 <sup>a</sup>	.2418 <sup>a</sup>	/
93	-.2333 <sup>a</sup>	.2335 <sup>a</sup>	/
94	-.4006 <sup>a</sup>	.4006 <sup>a</sup>	/
95	-.1082	.1114	
97	-.1417	.2086 <sup>a</sup>	
98	-.1474	.1474	
99	.1991	.4928 <sup>a</sup>	
100	-.1585	.3608 <sup>a</sup>	
รวม	32 (45.07%)	47 (66.20%)	32 (45.07%)



ภาคผนวก ๑.

โค้งลักษณะที่สอบจากแบบสอบแก้ที่ 1

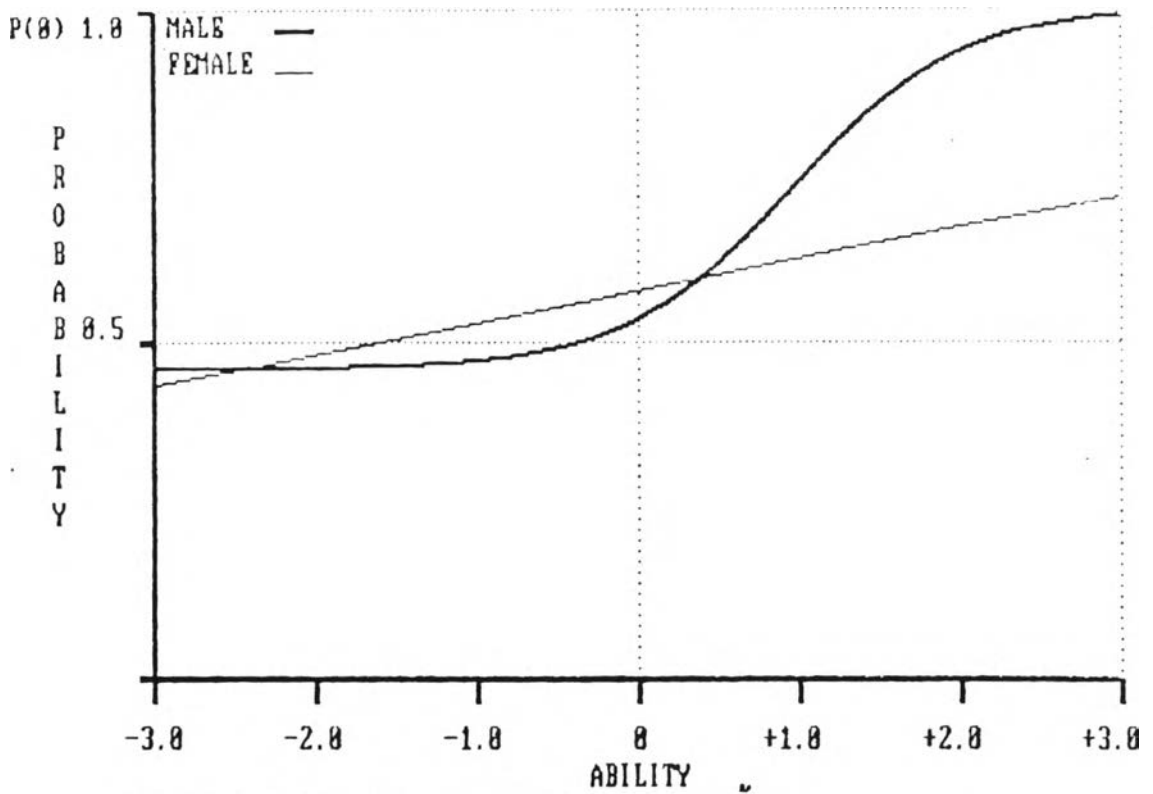


FIGURE 1 PLOT ITEM CHARACTERISTIC CURVE (Fig 1)

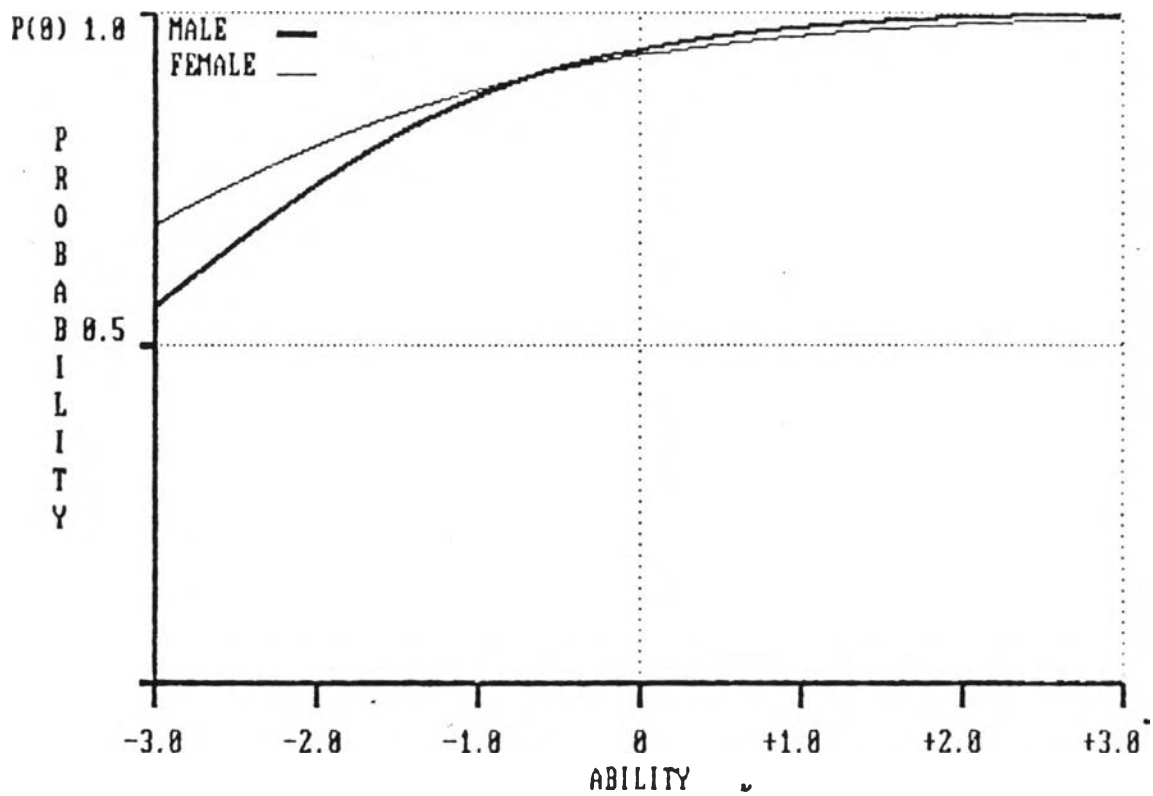


FIGURE 2 PLOT ITEM CHARACTERISTIC CURVE (Fig 3)

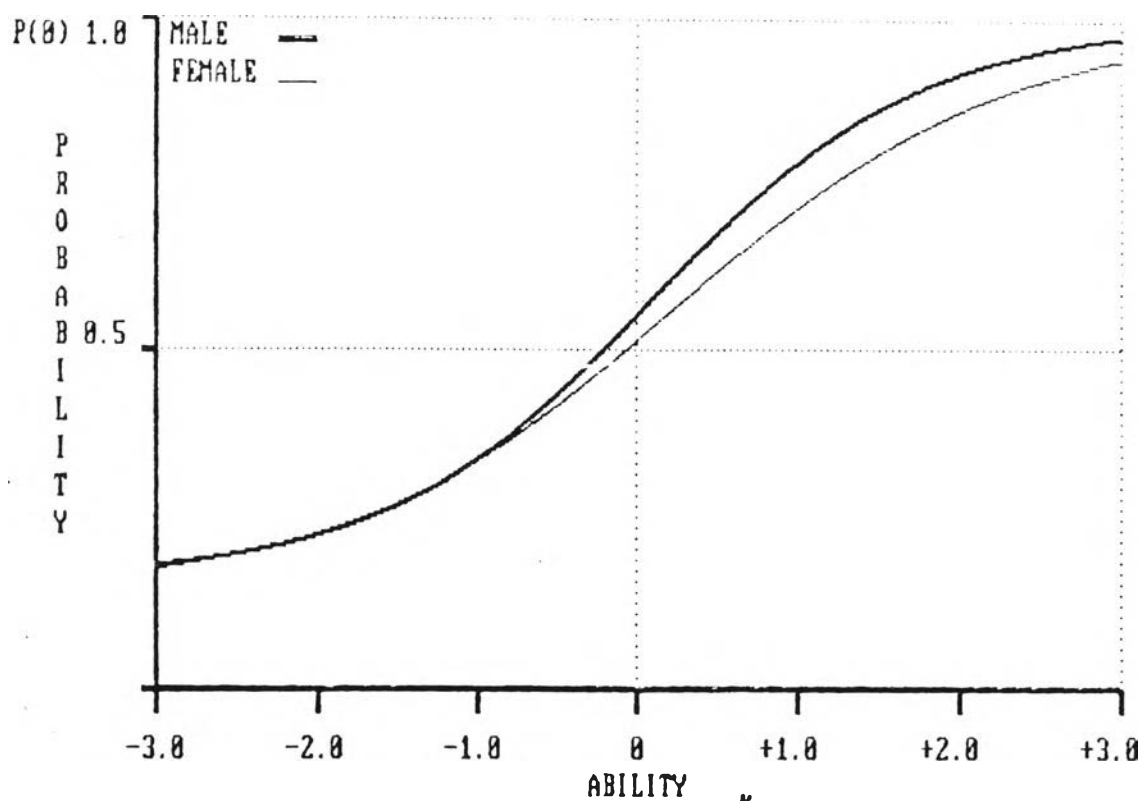


FIGURE 3 PLOT ITEM CHARACTERISTIC CURVE (Figure 5)

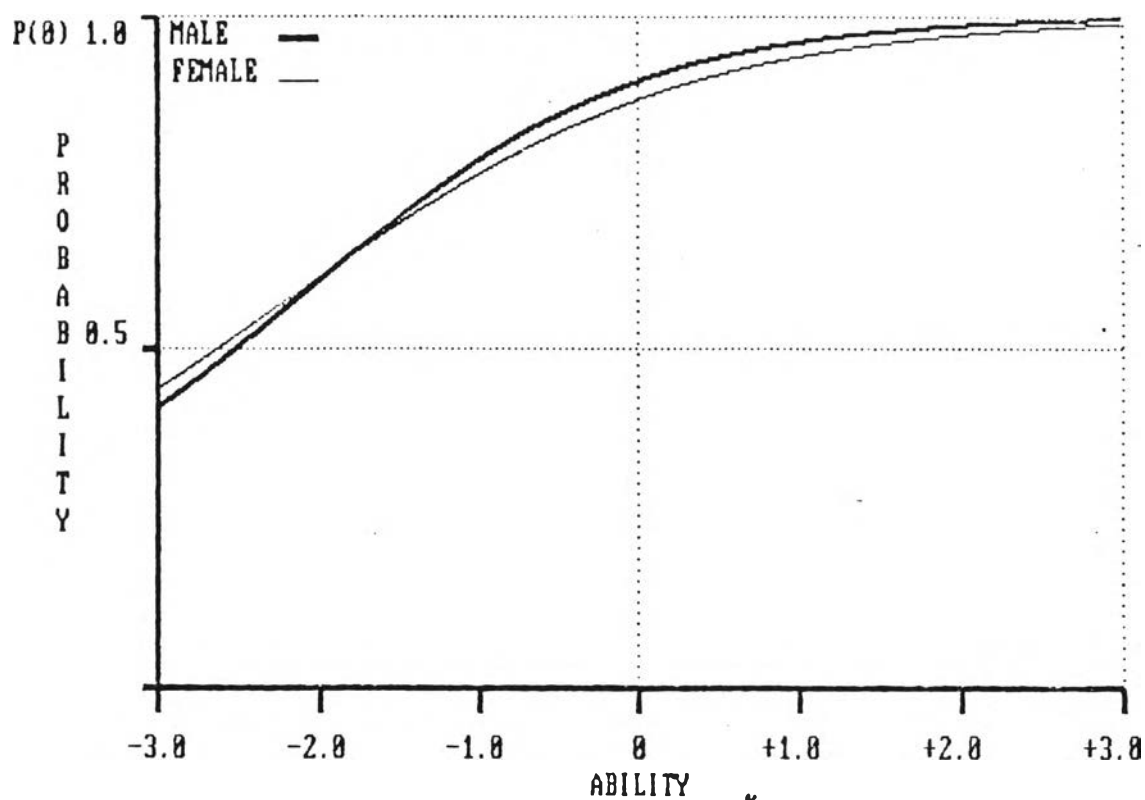


FIGURE 4 PLOT ITEM CHARACTERISTIC CURVE (Figure 6)

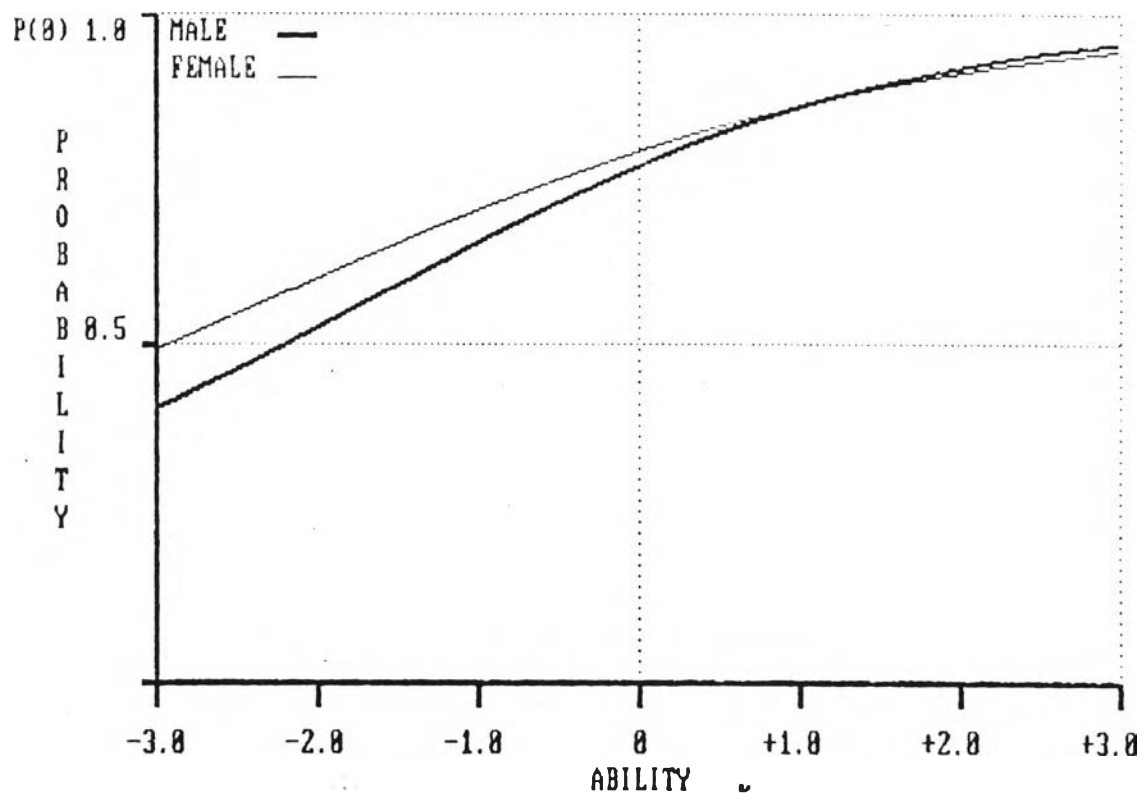


FIGURE 5 PLOT ITEM CHARACTERISTIC CURVE (item 7)

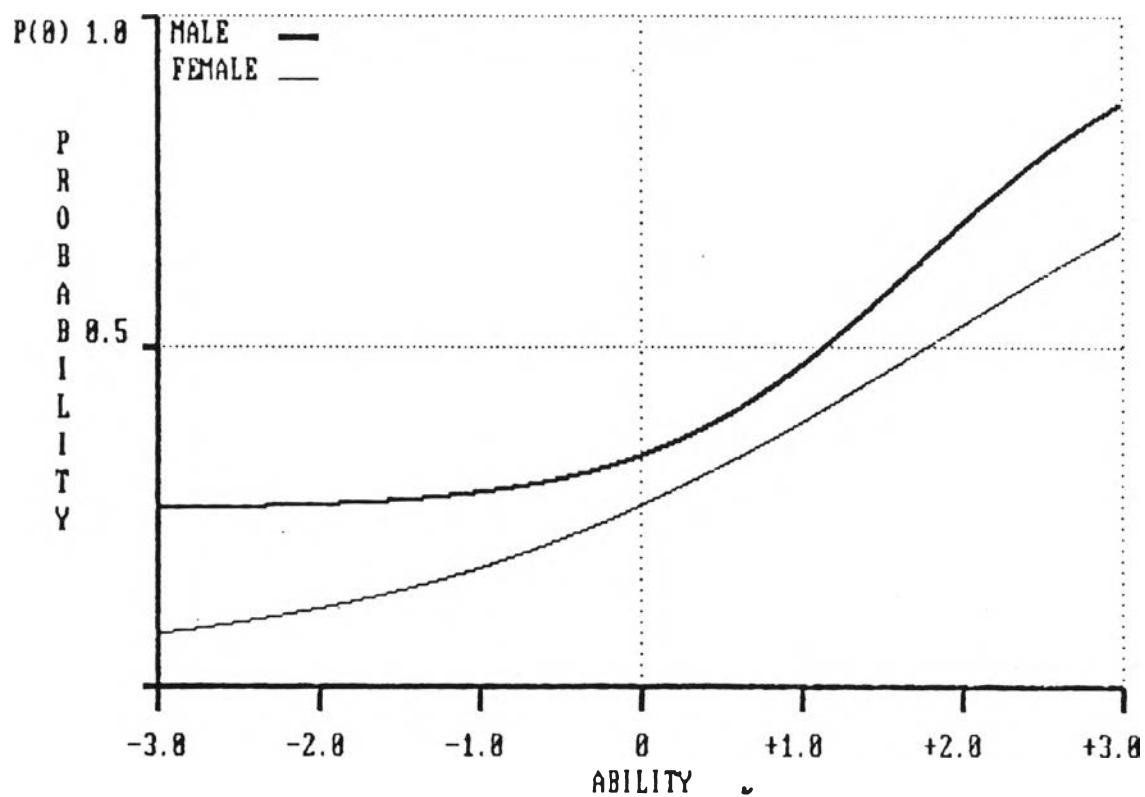


FIGURE 6 PLOT ITEM CHARACTERISTIC CURVE (item 13)

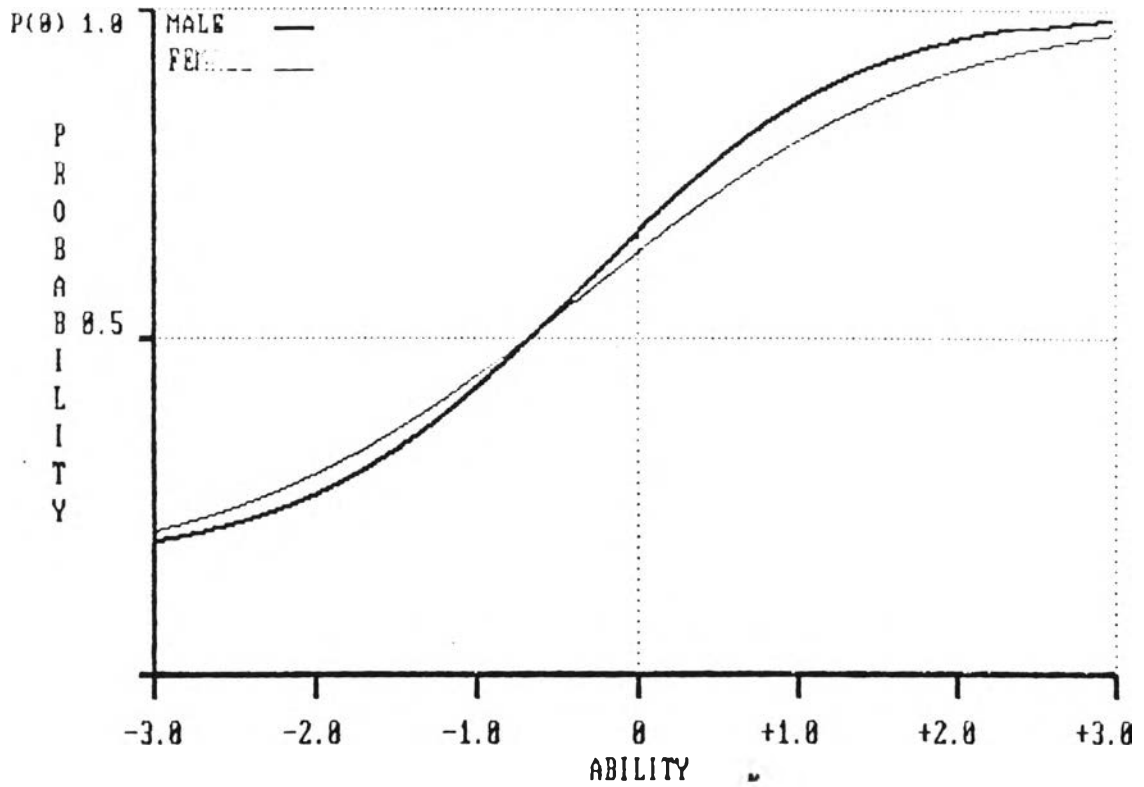


FIGURE 7 PLOT ITEM CHARACTERISTIC CURVE (item 14)

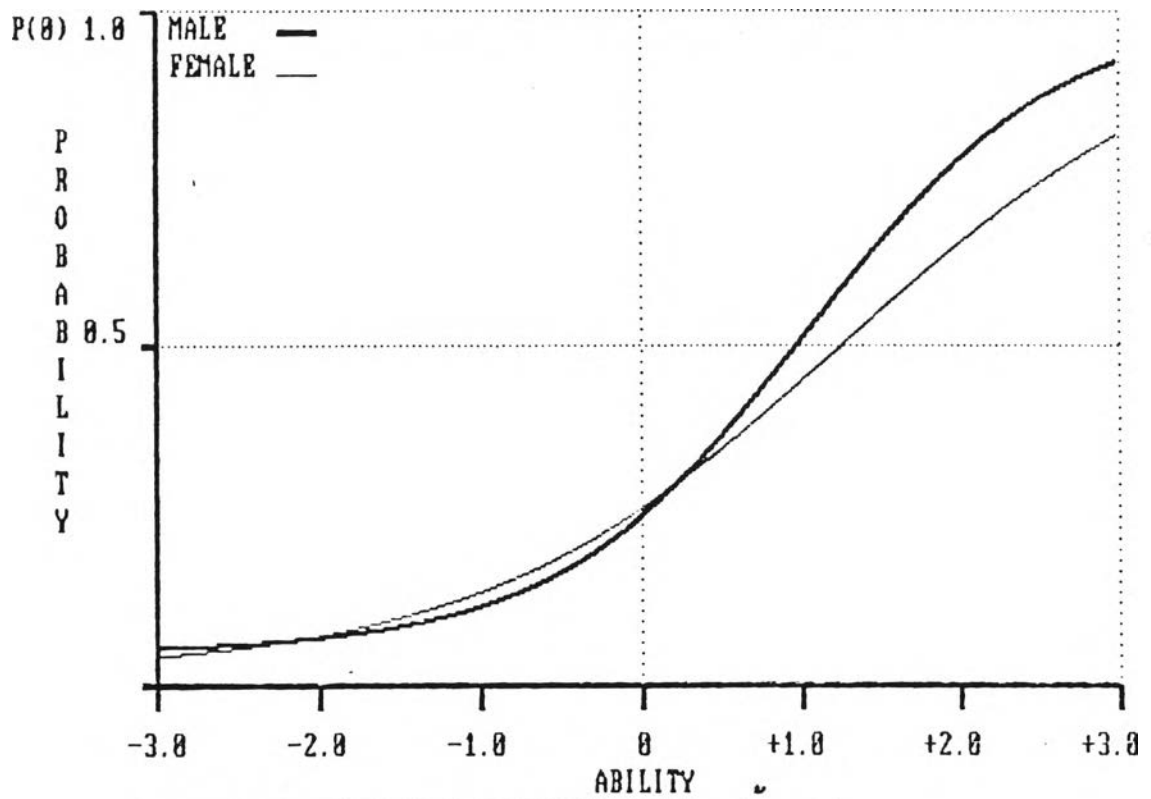


FIGURE 8 PLOT ITEM CHARACTERISTIC CURVE (item 15)

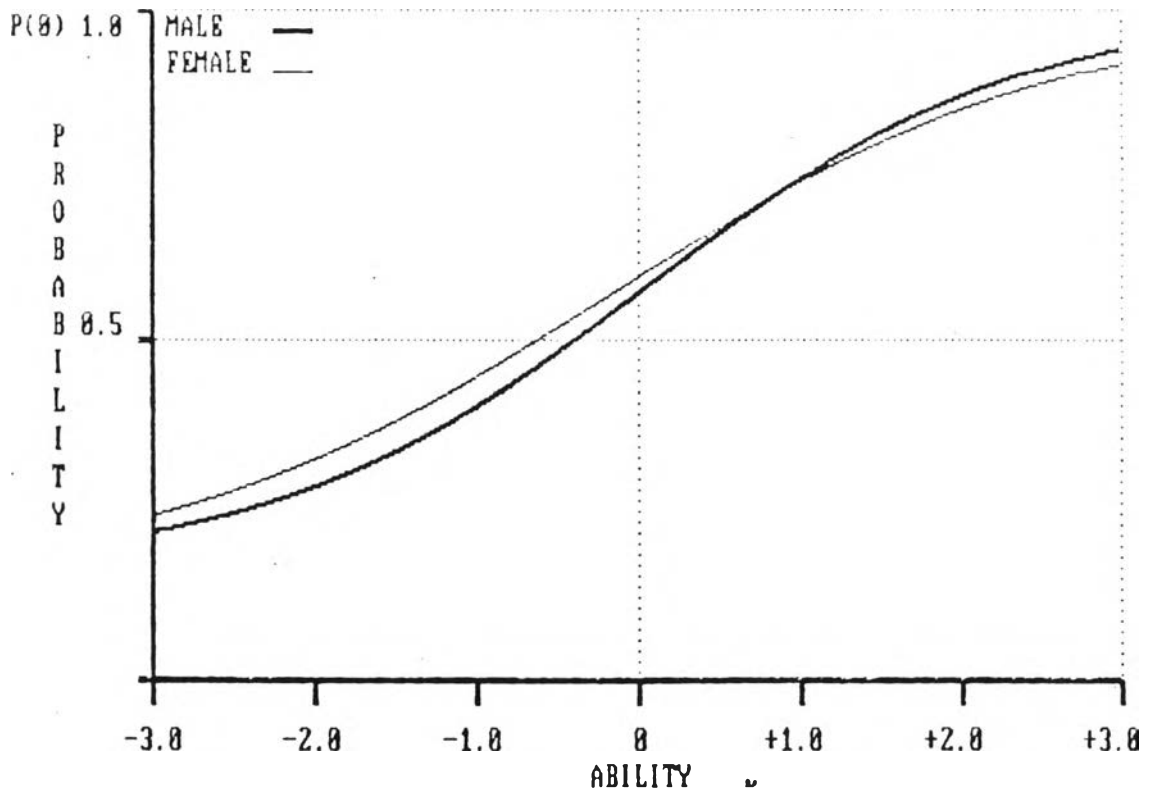


FIGURE 9 PLOT ITEM CHARACTERISTIC CURVE (item 18)

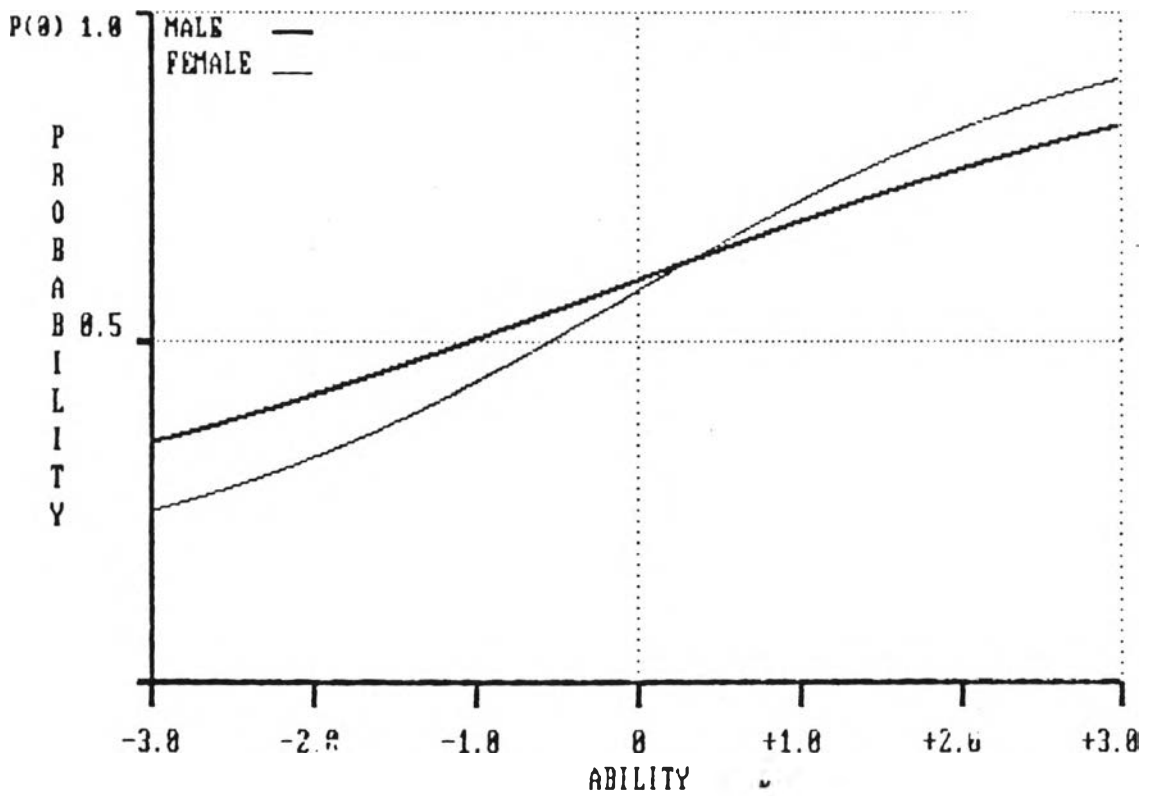


FIGURE 10 PLOT ITEM CHARACTERISTIC CURVE (item 20)

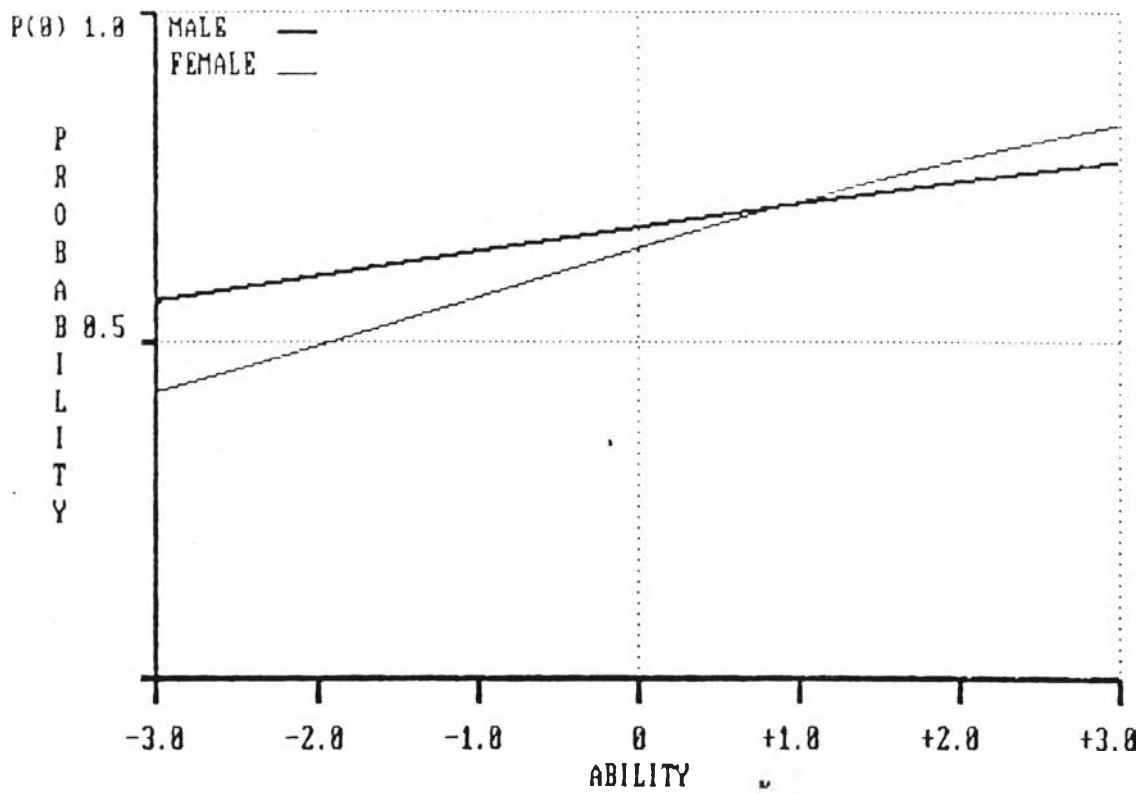


FIGURE 11 PLOT ITEM CHARACTERISTIC CURVE (Item 22)

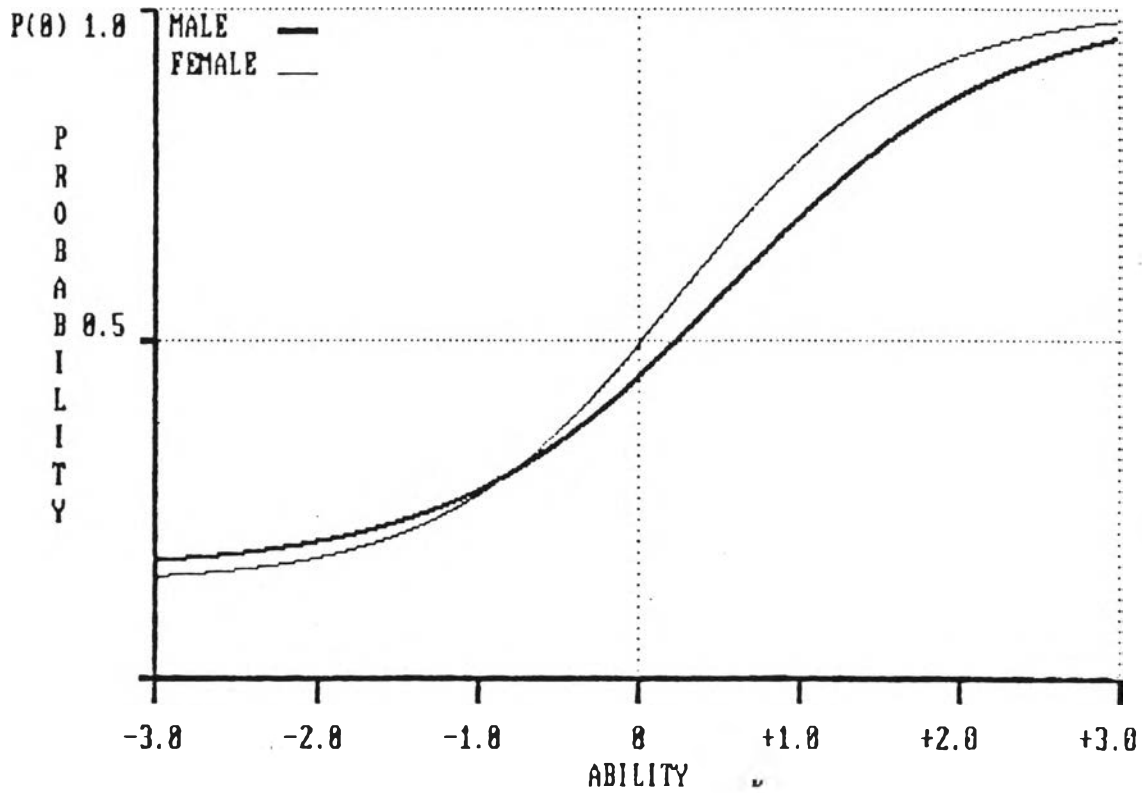


FIGURE 12 PLOT ITEM CHARACTERISTIC CURVE (Item 23)

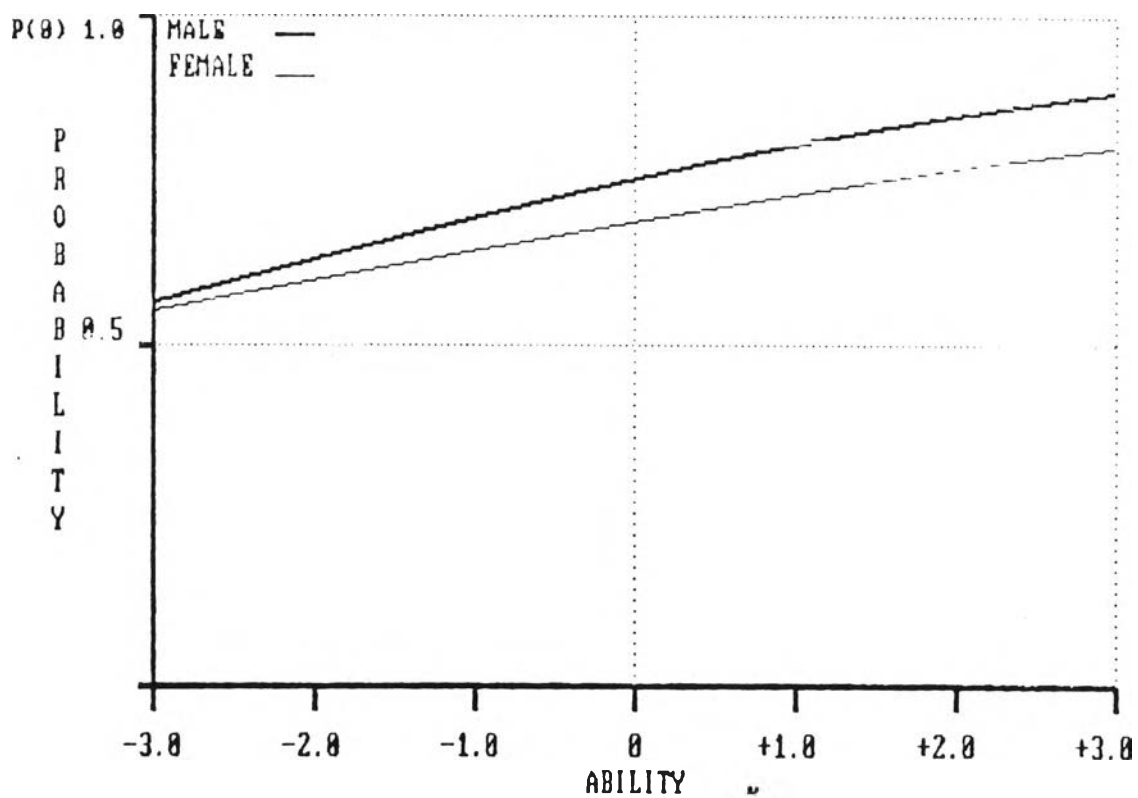


FIGURE 13 PLOT ITEM CHARACTERISTIC CURVE (p 25)

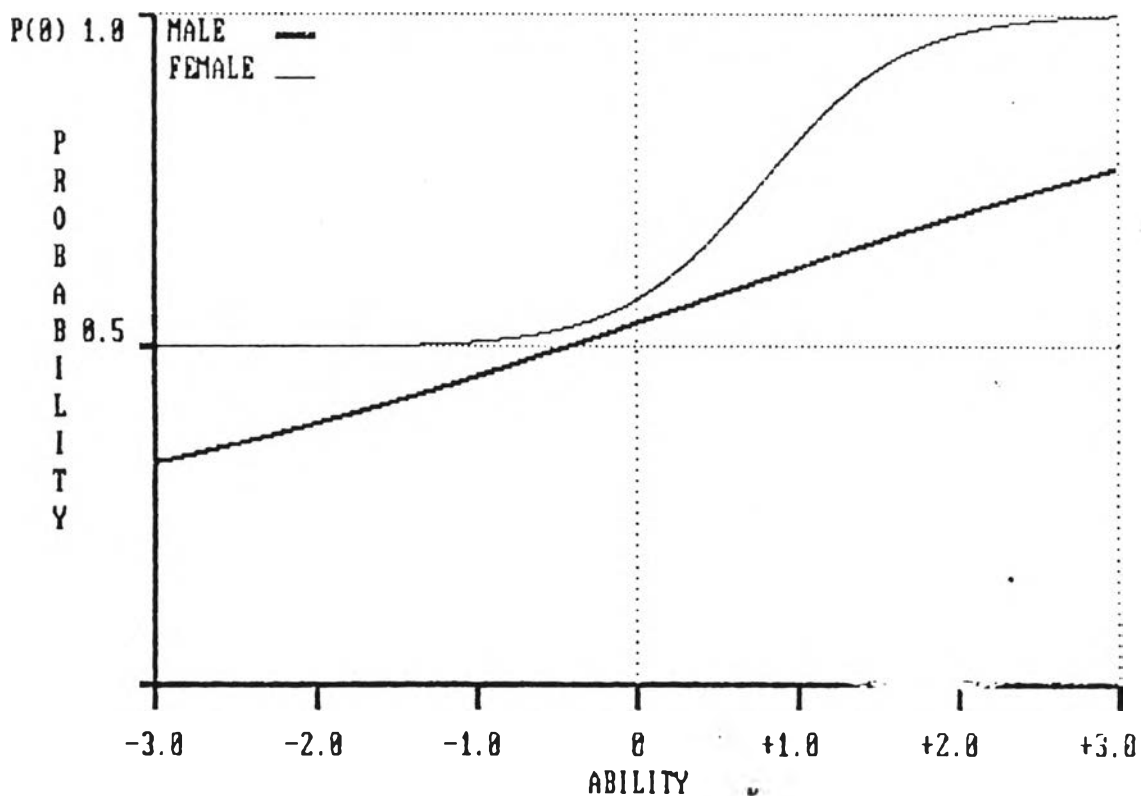


FIGURE 14 PLOT ITEM CHARACTERISTIC CURVE (p 27)



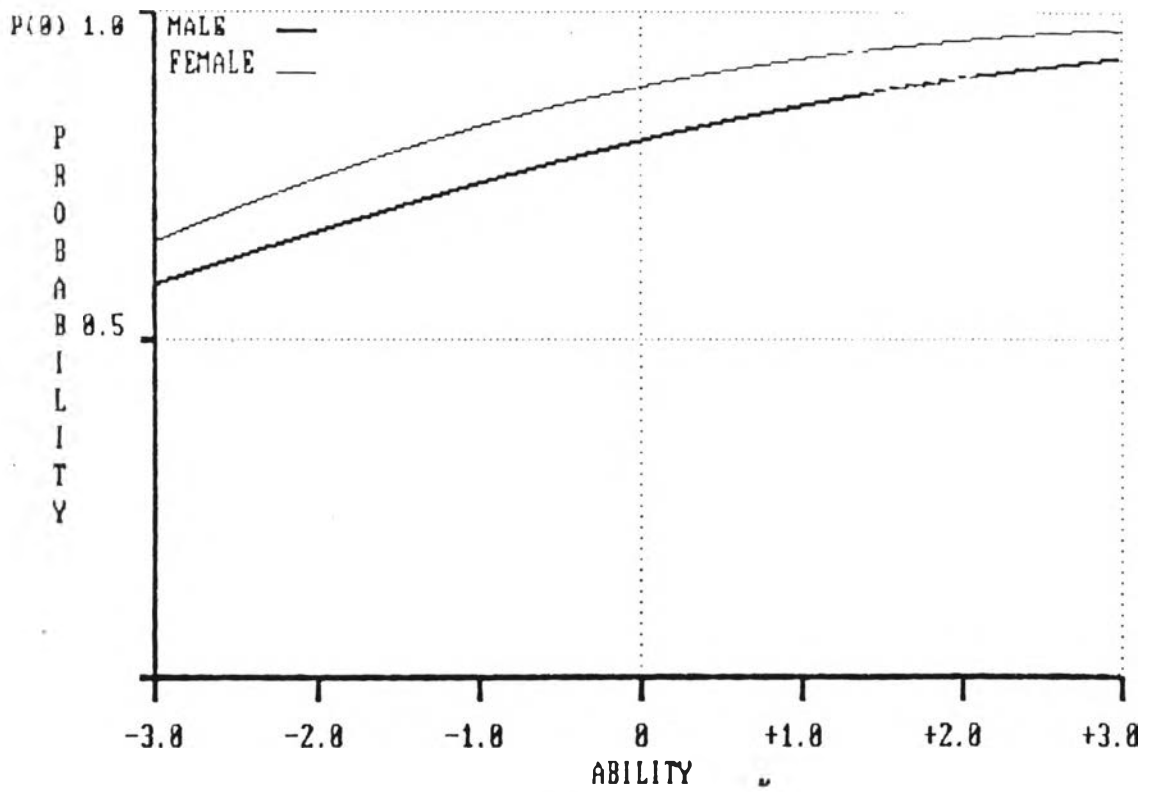


FIGURE 15 PLOT ITEM CHARACTERISTIC CURVE (item 30)

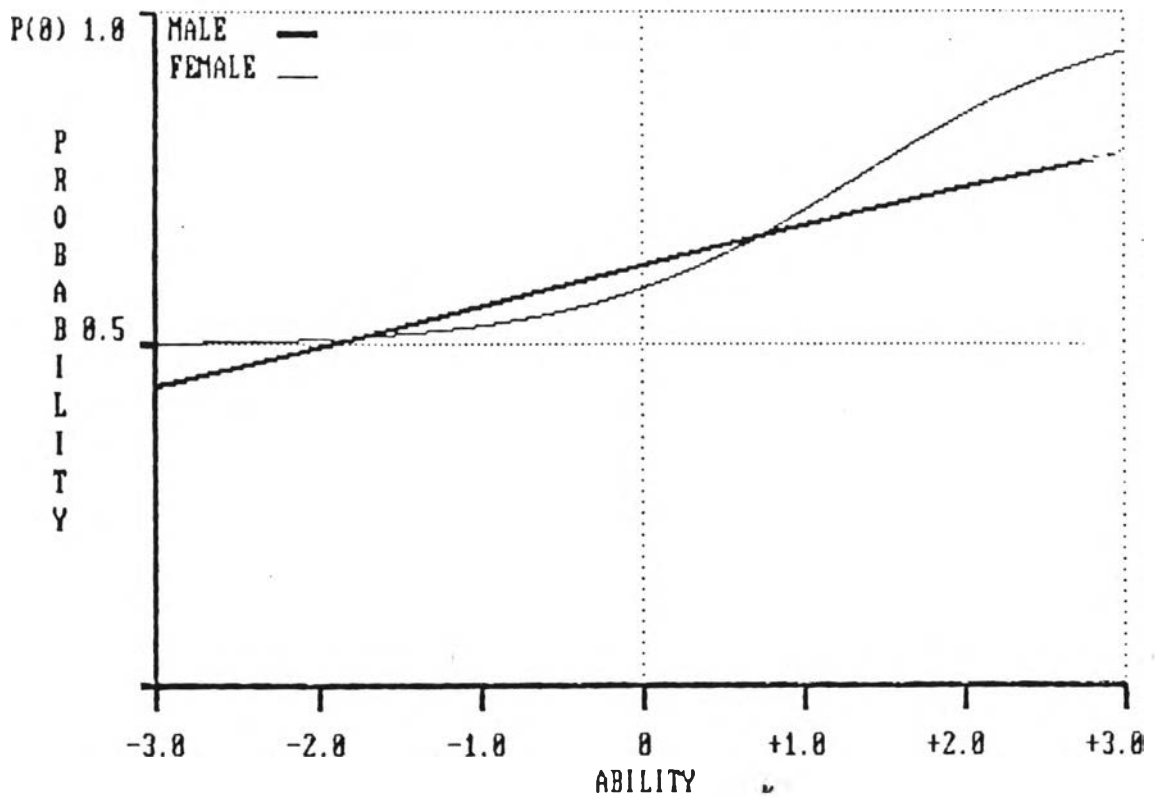


FIGURE 16 PLOT ITEM CHARACTERISTIC CURVE (item 32)

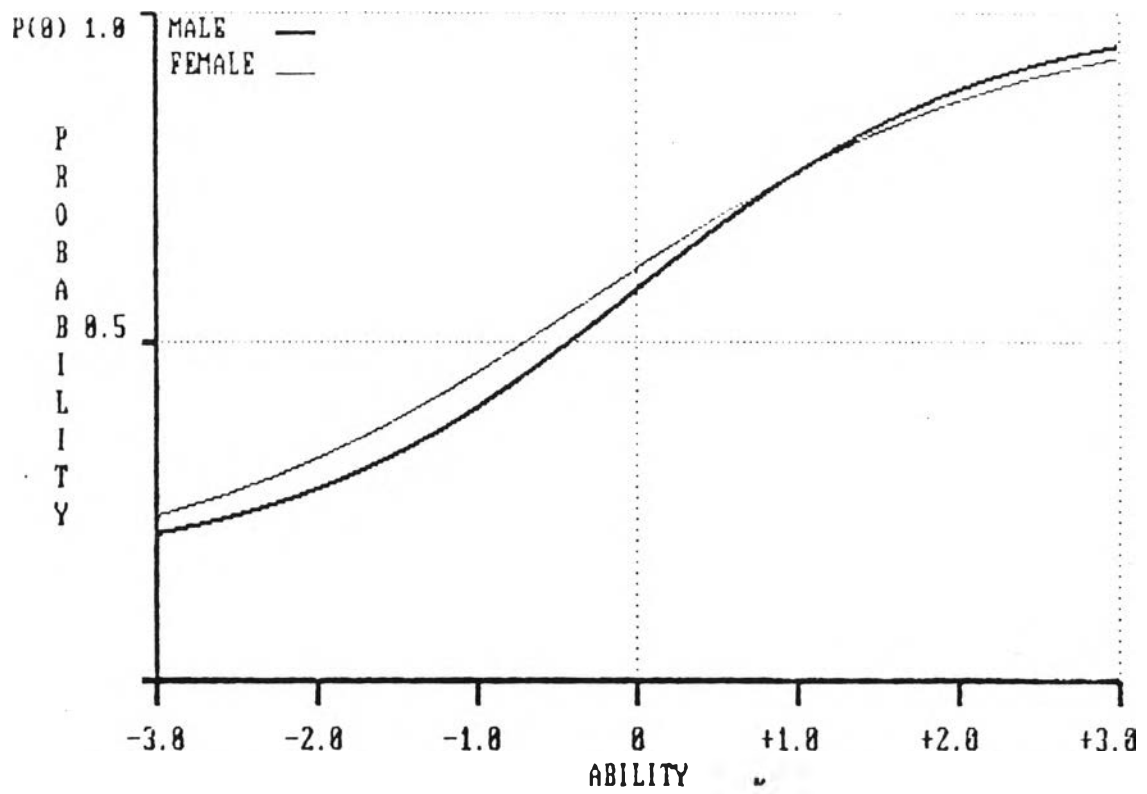


FIGURE 17 PLOT ITEM CHARACTERISTIC CURVE (ID 33)

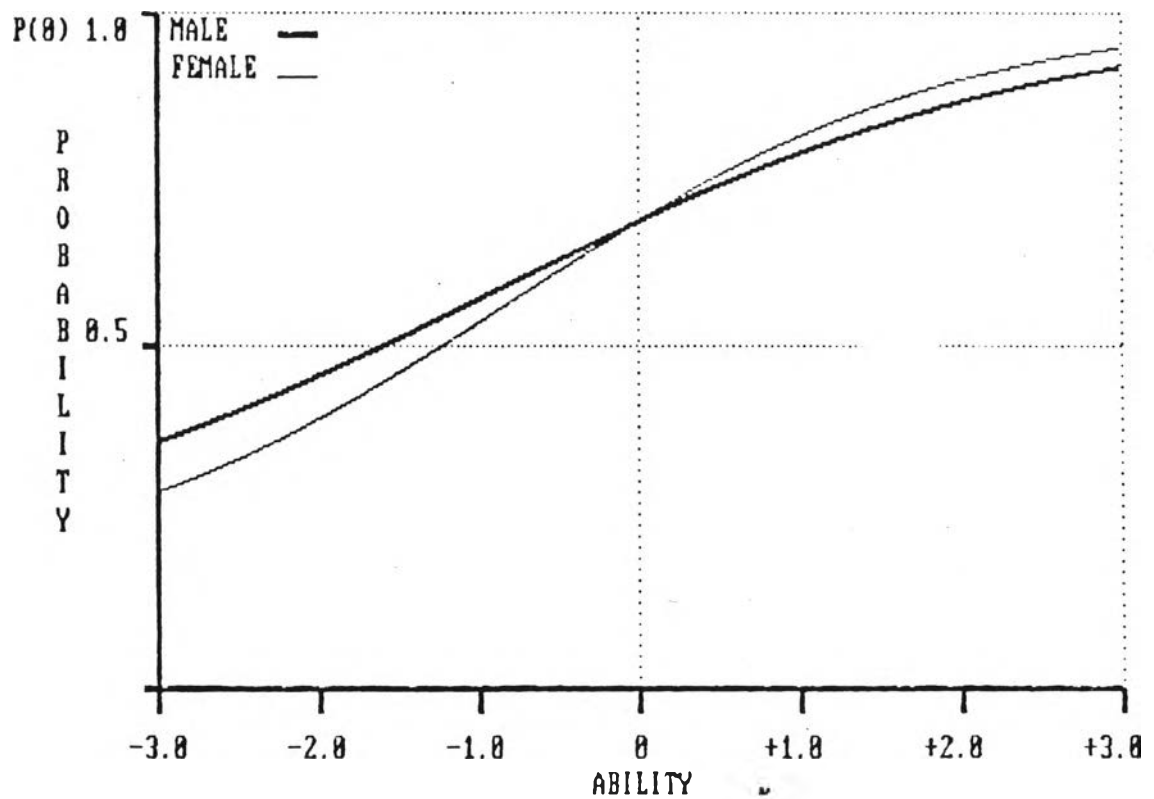


FIGURE 18 PLOT ITEM CHARACTERISTIC CURVE (ID 34)

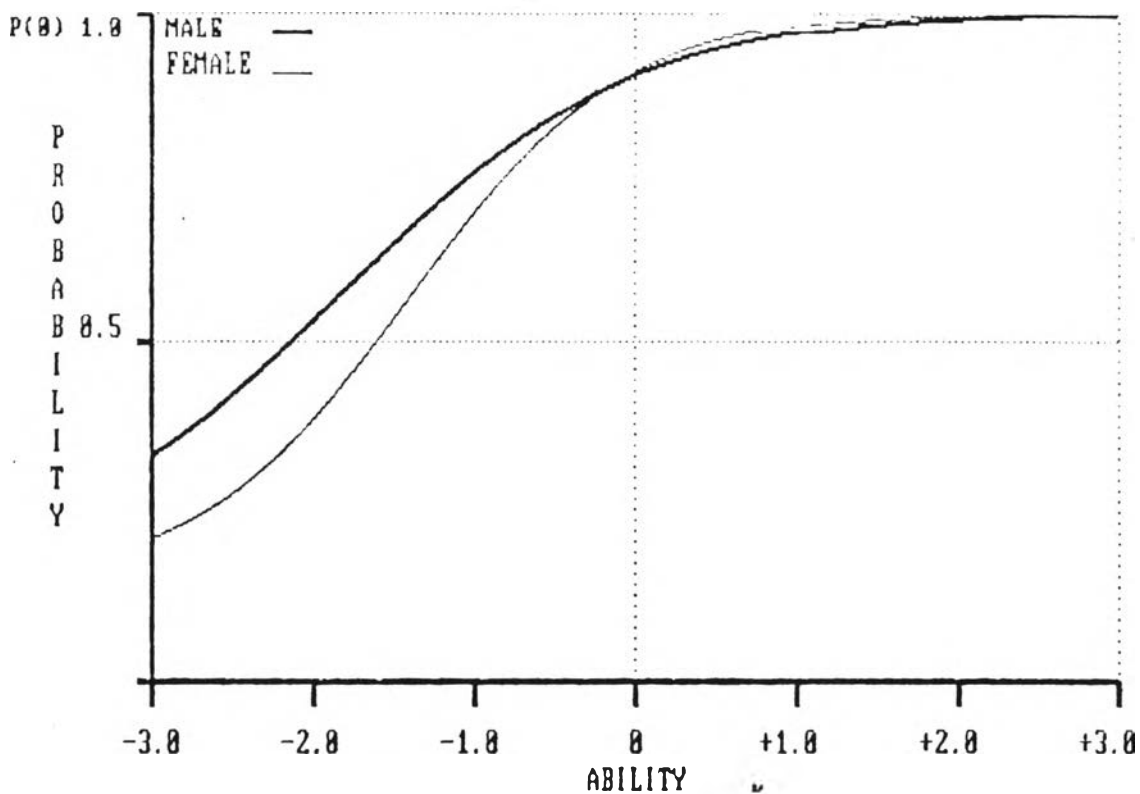


FIGURE 19 PLOT ITEM CHARACTERISTIC CURVE (item 38)

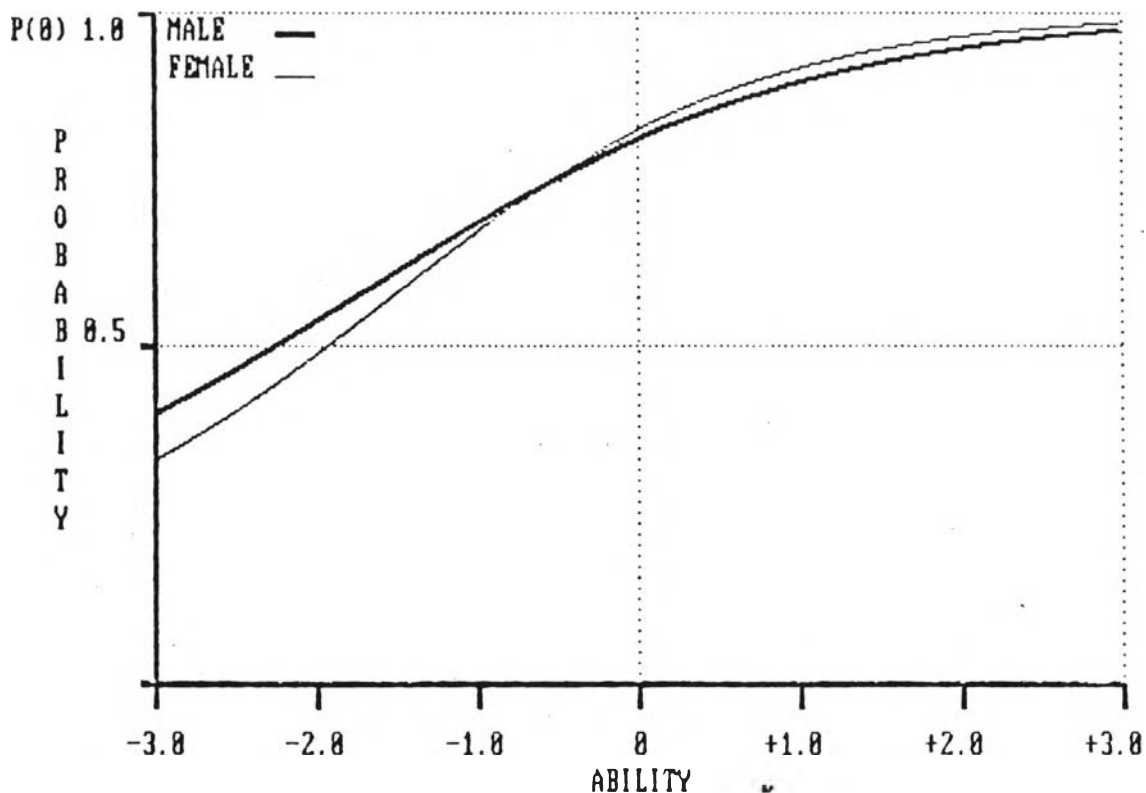


FIGURE 20 PLOT ITEM CHARACTERISTIC CURVE (item 39)

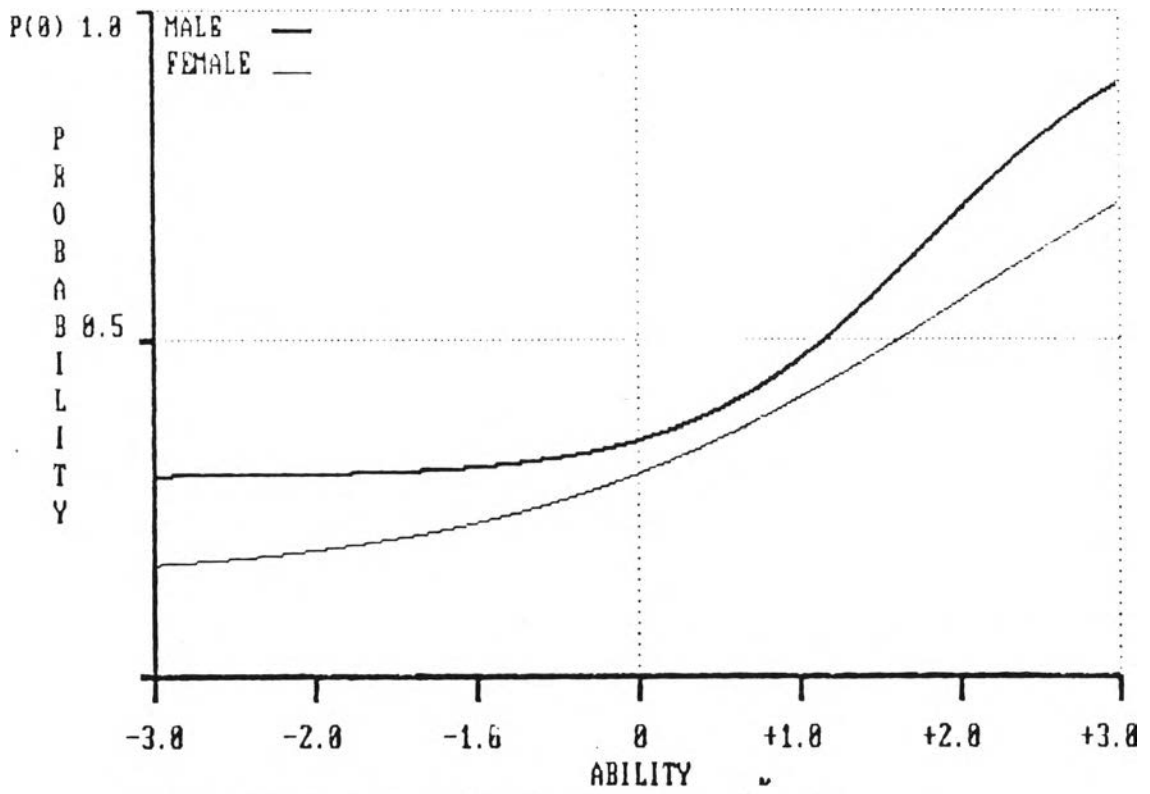


FIGURE 21 PLOT ITEM CHARACTERISTIC CURVE (Item 41)

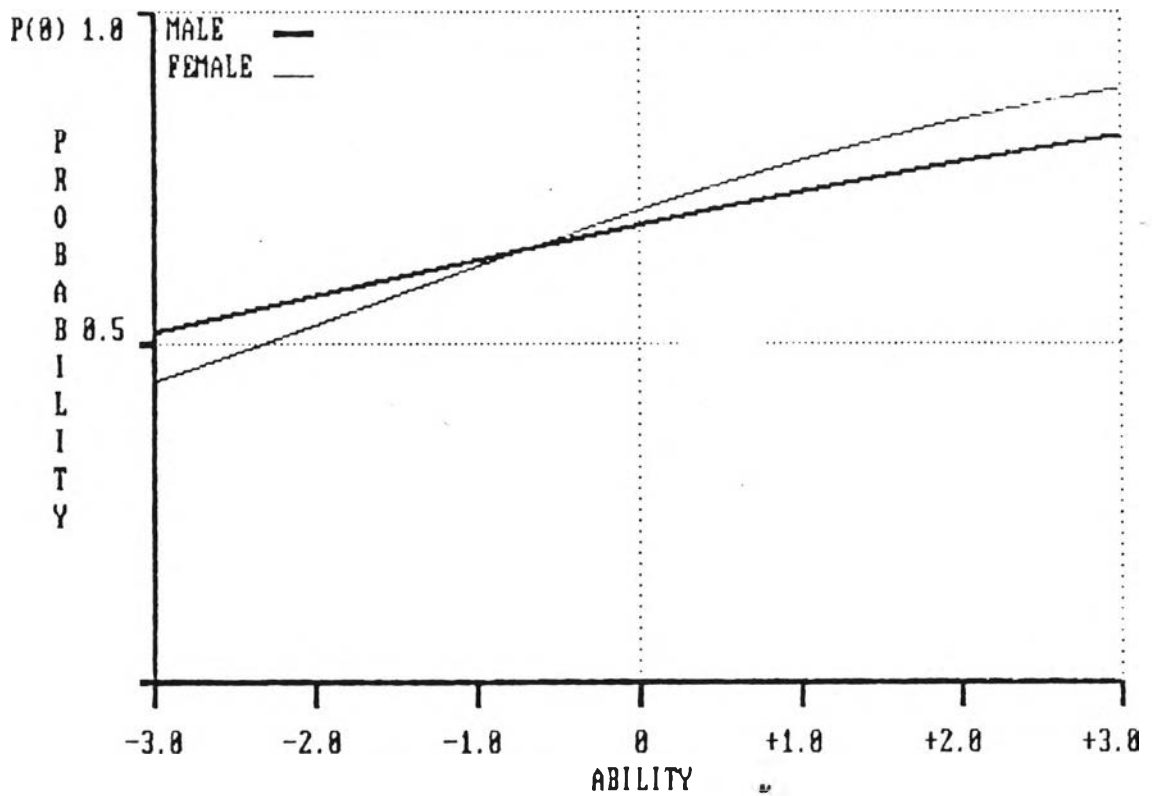


FIGURE 22 PLOT ITEM CHARACTERISTIC CURVE (Item 42)

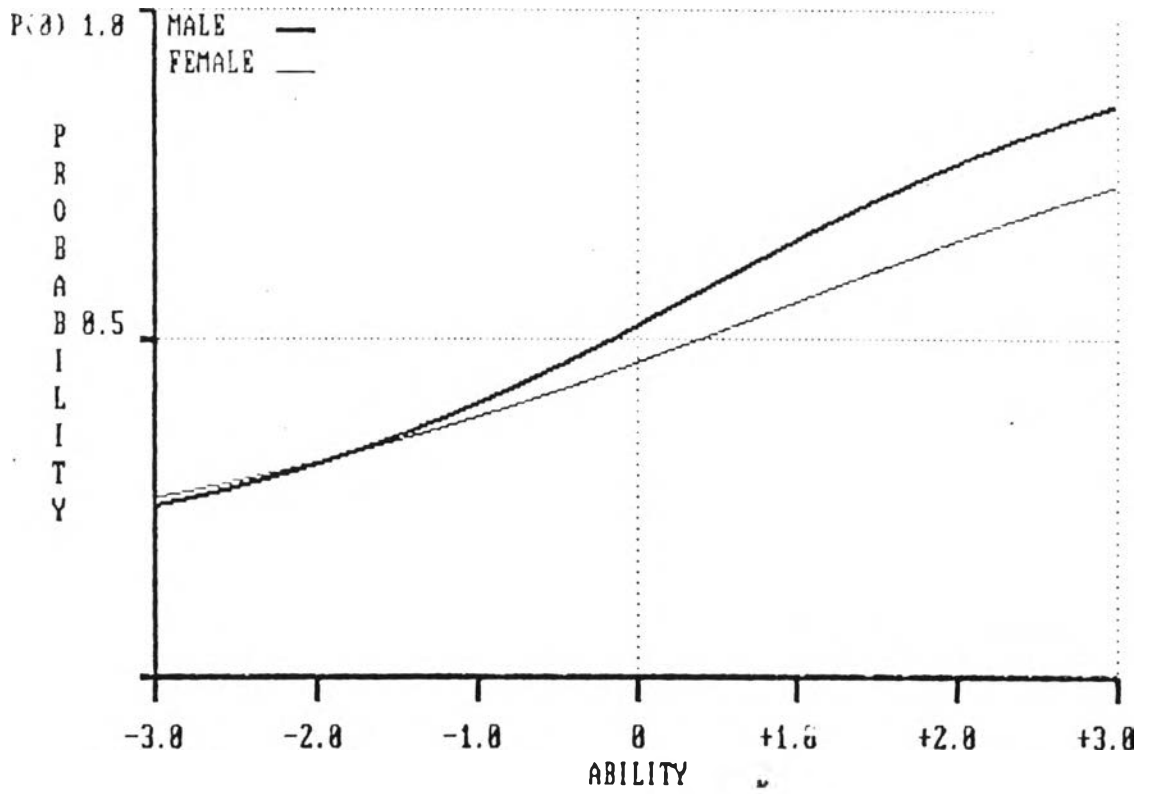


FIGURE 23 PLOT ITEM CHARACTERISTIC CURVE (ID 43)

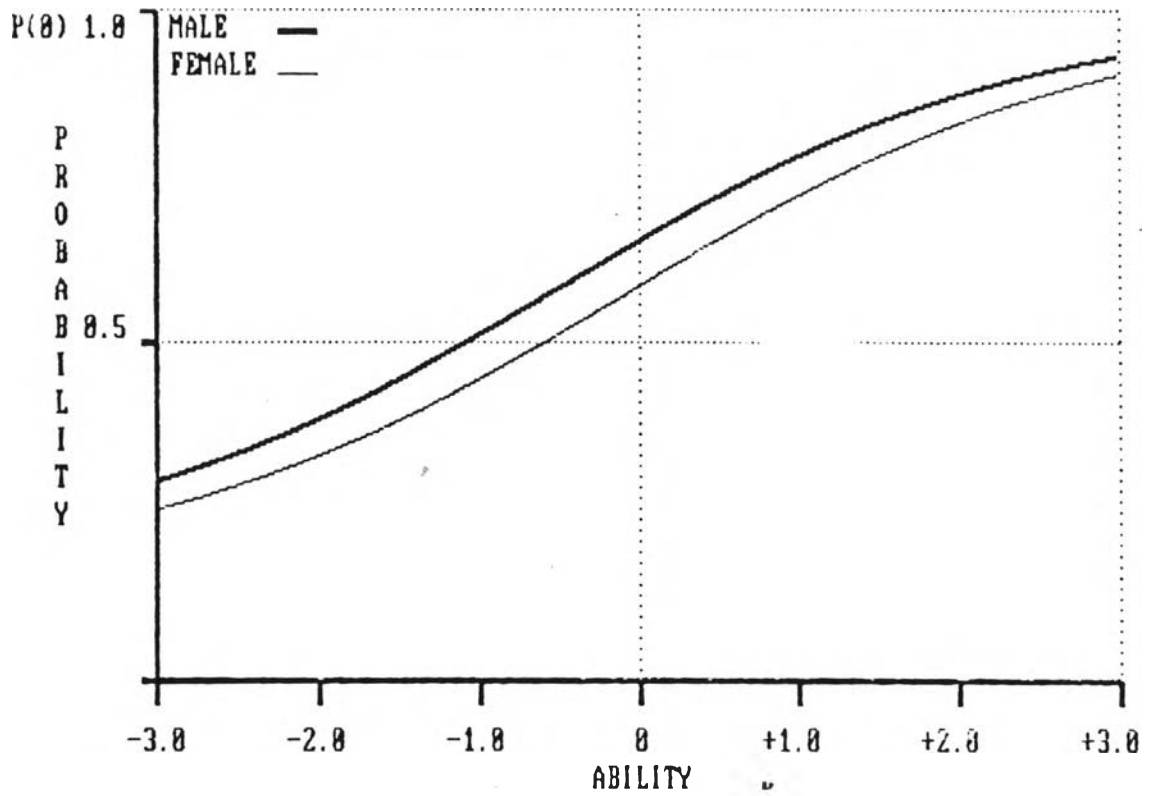


FIGURE 24 PLOT ITEM CHARACTERISTIC CURVE (ID 44)

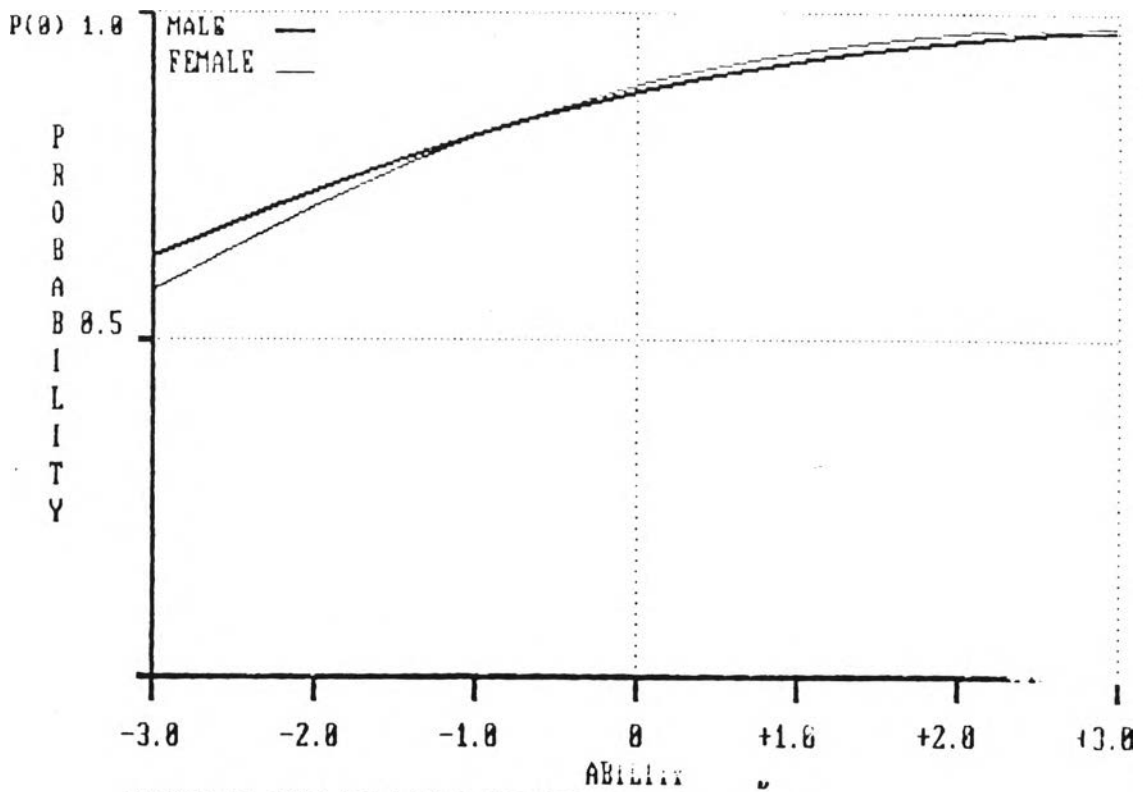


FIGURE 25 PLOT ITEM CHARACTERISTIC CURVE (8046)

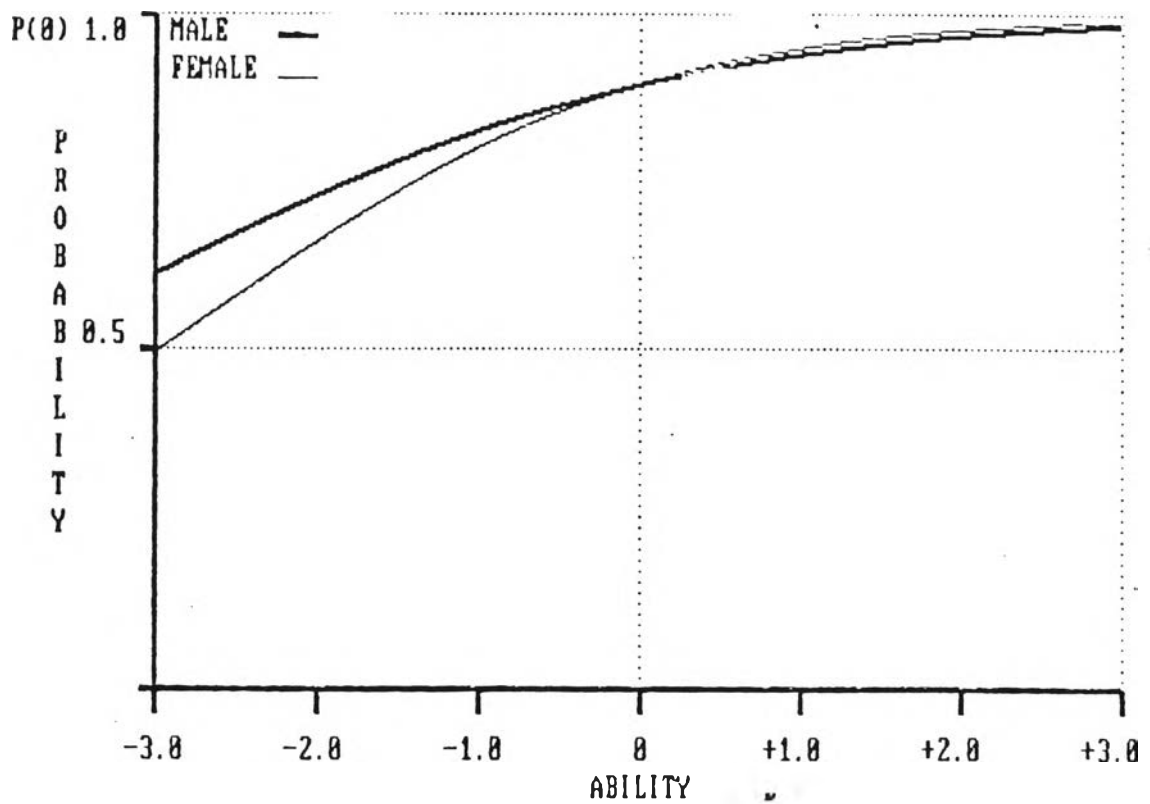


FIGURE 26 PLOT ITEM CHARACTERISTIC CURVE (8047)

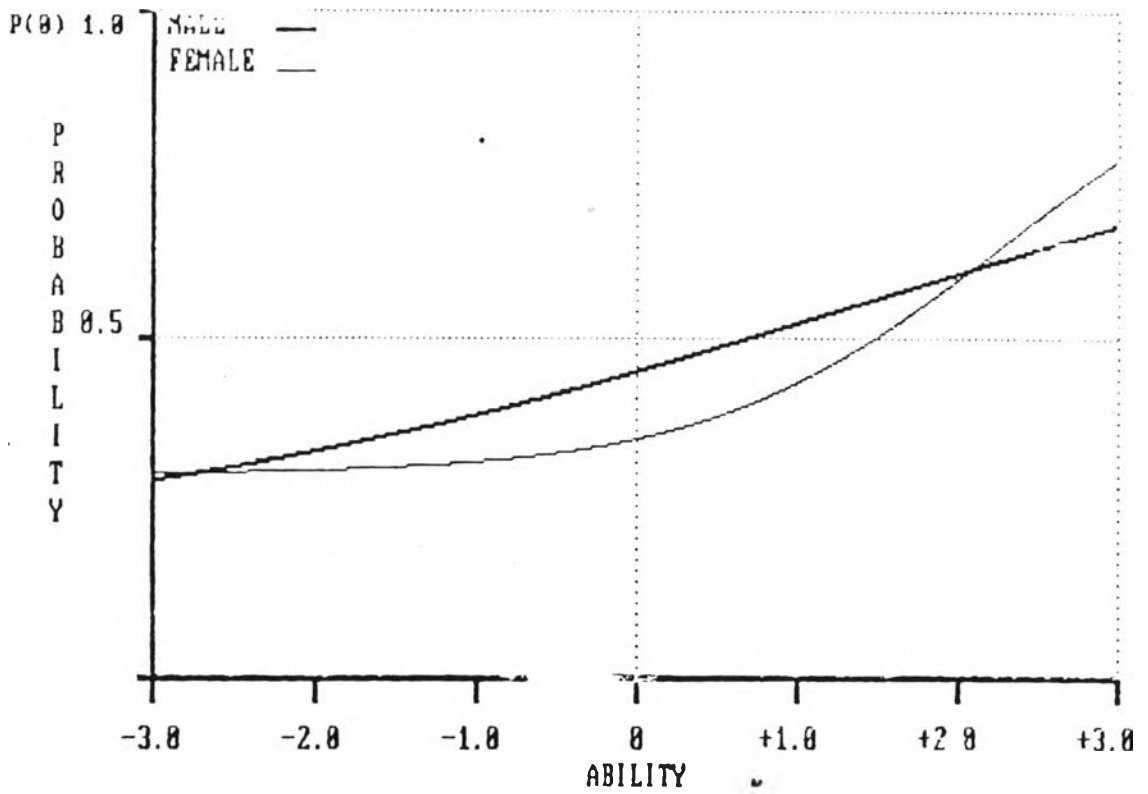


FIGURE 27 PLOT ITEM CHARACTERISTIC CURVE (ID 48)

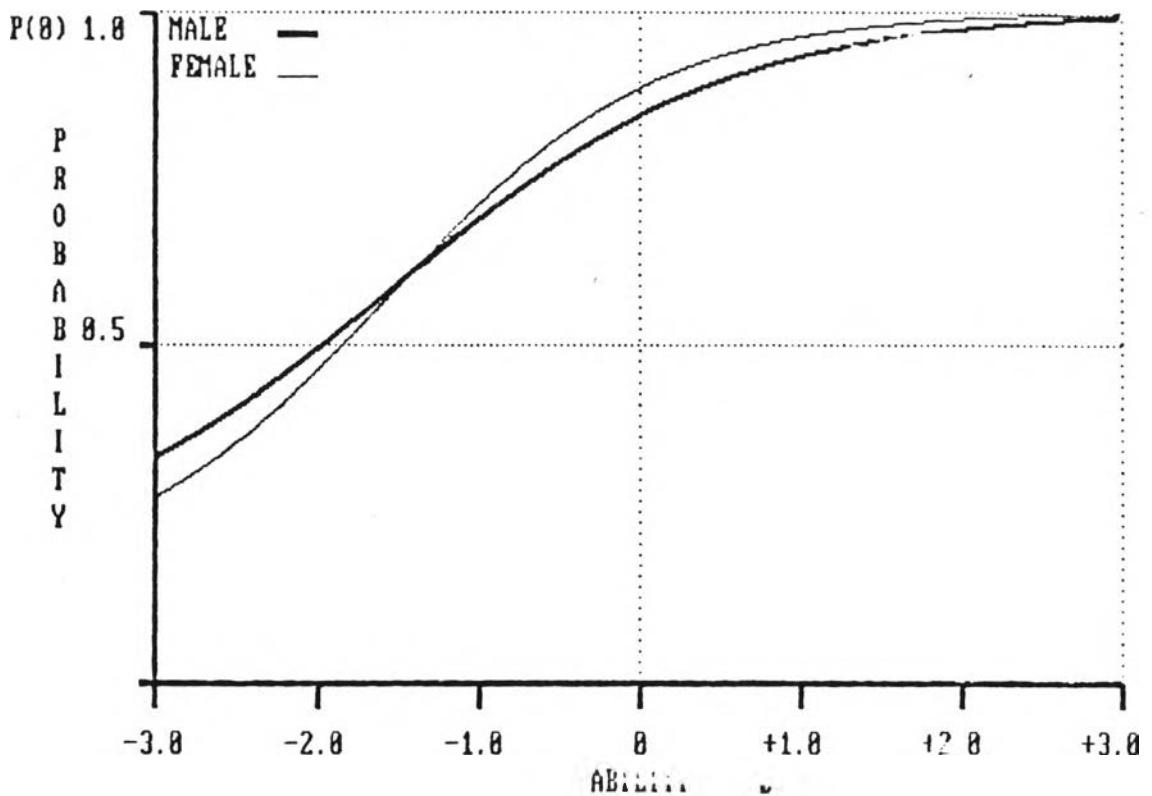


FIGURE 28 PLOT ITEM CHARACTERISTIC CURVE (ID 49)

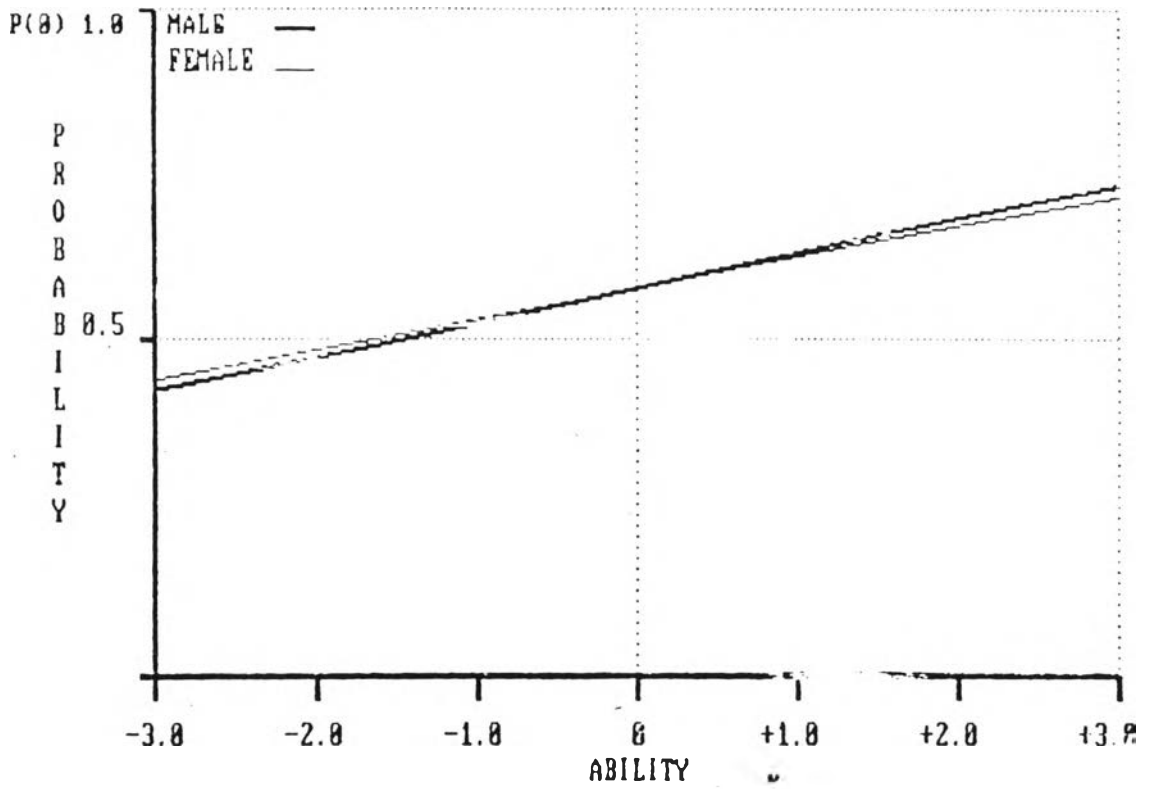


FIGURE 29 PLOT ITEM CHARACTERISTIC CURVE (no 50)

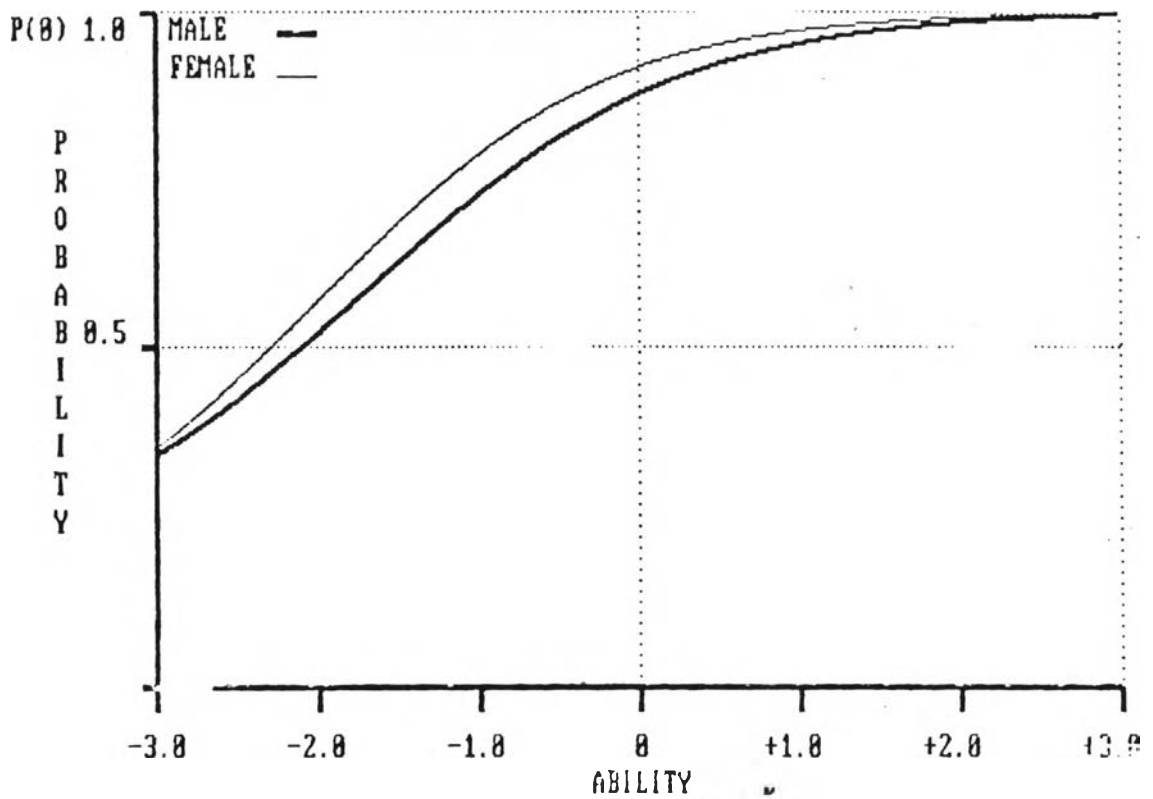


FIGURE 30 PLOT ITEM CHARACTERISTIC CURVE (no 52)



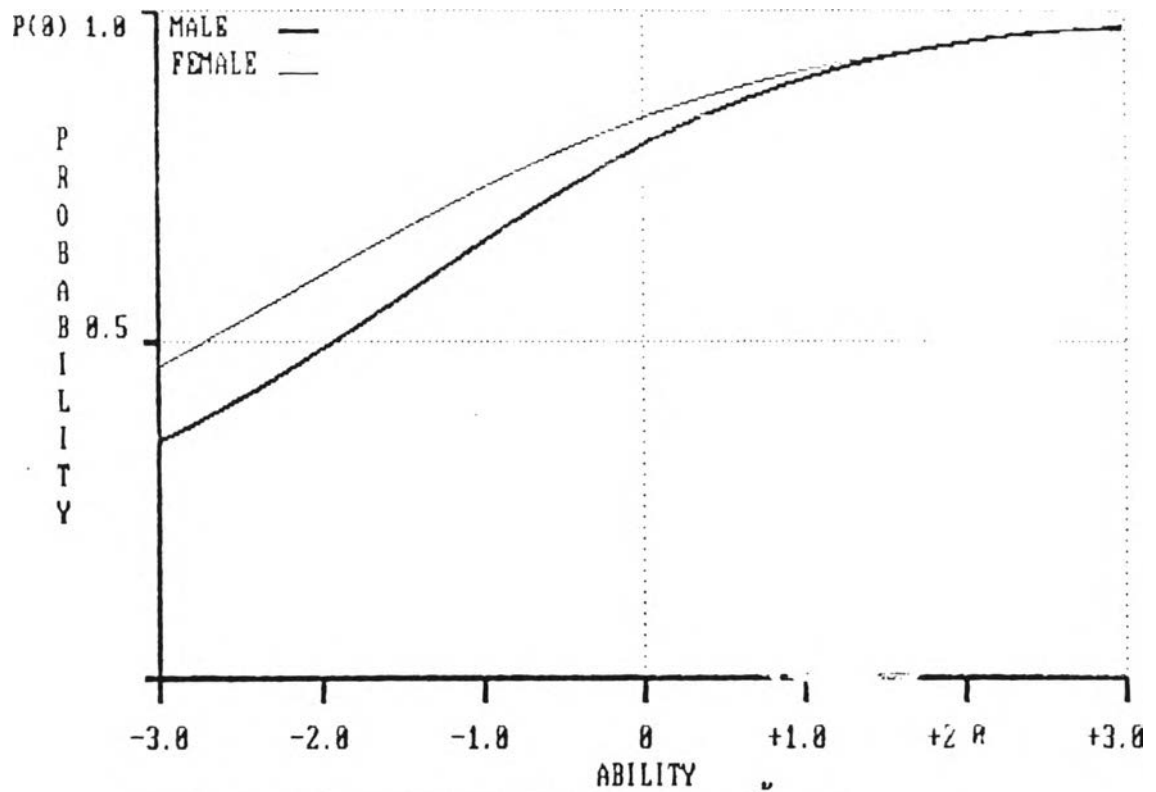


FIGURE 31 PLOT ITEM CHARACTERISTIC CURVE (no 53)

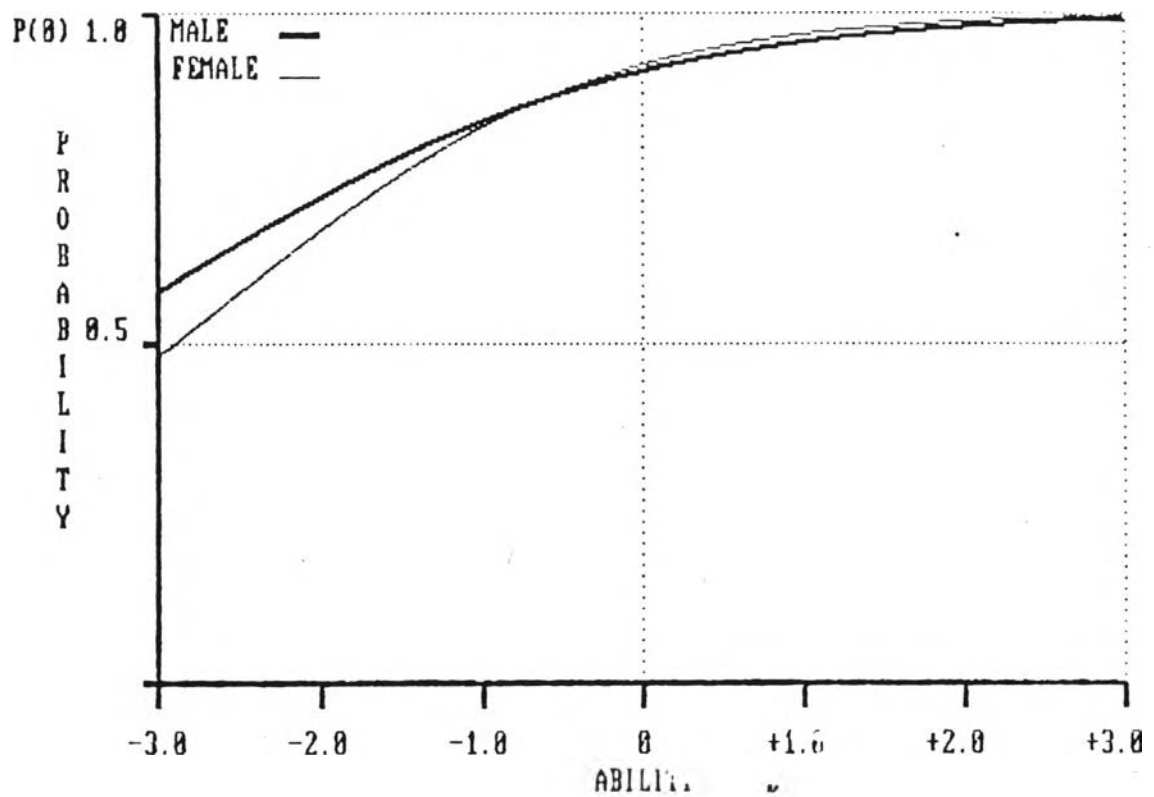


FIGURE 32 PLOT ITEM CHARACTERISTIC CURVE (no 54)

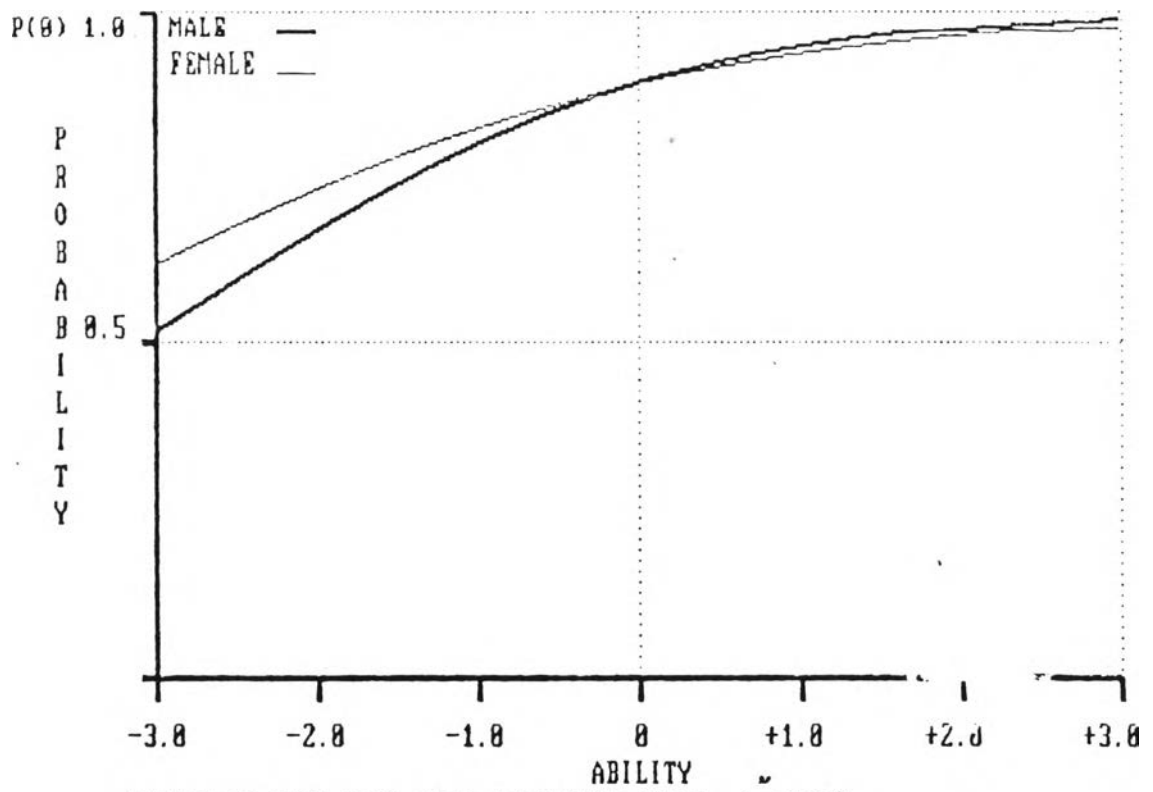


FIGURE 33 PLOT ITEM CHARACTERISTIC CURVE (item 55)

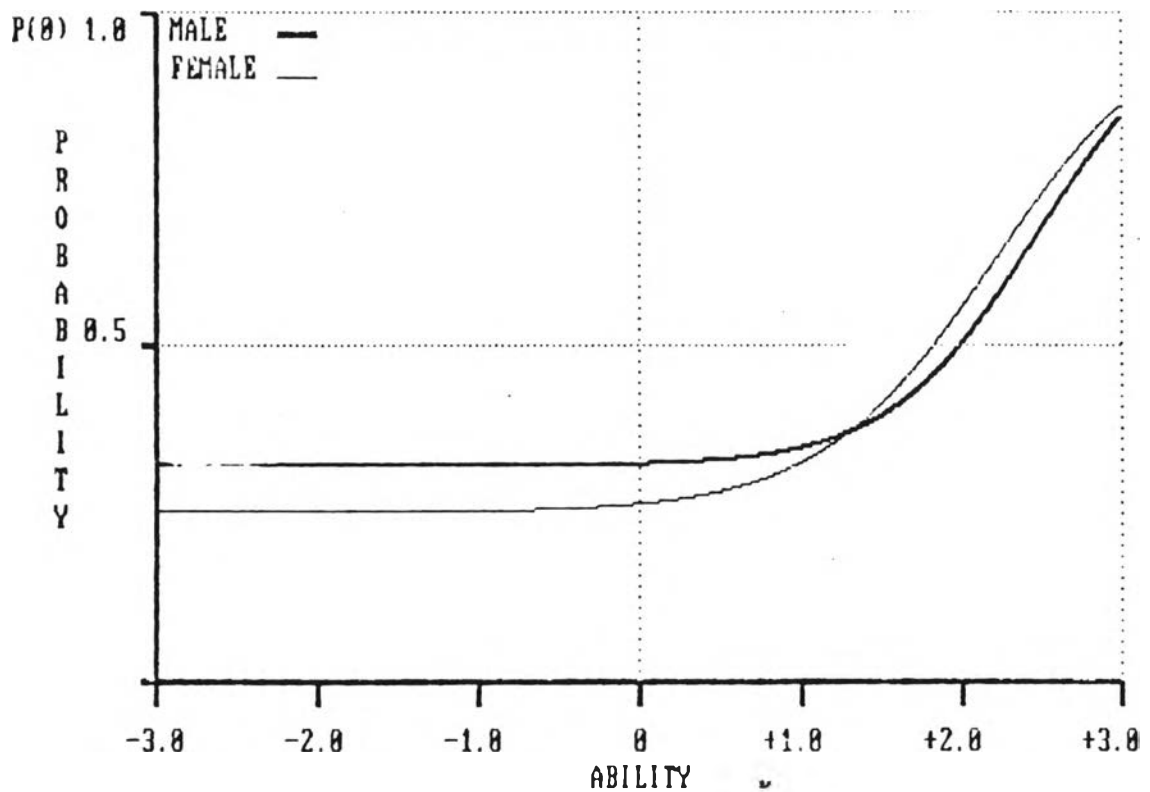


FIGURE 34 PLOT ITEM CHARACTERISTIC CURVE (item 58)

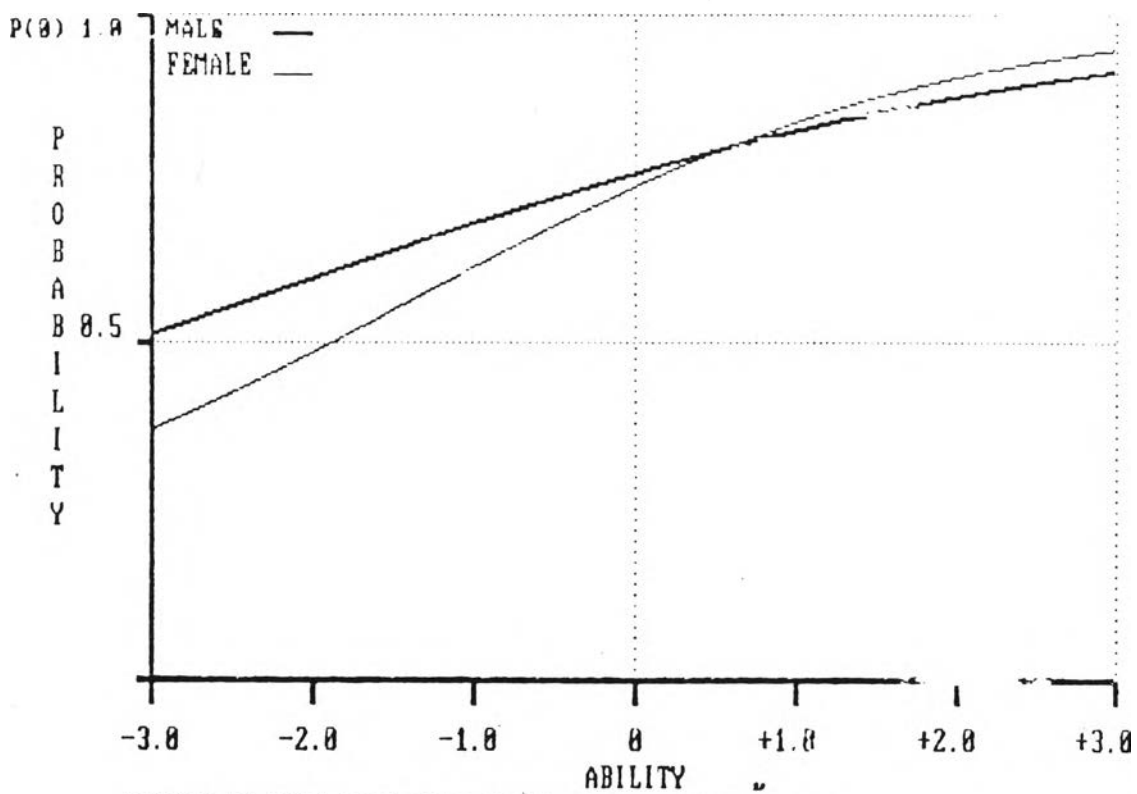


FIGURE 35 PLOT ITEM CHARACTERISTIC CURVE (no 59)

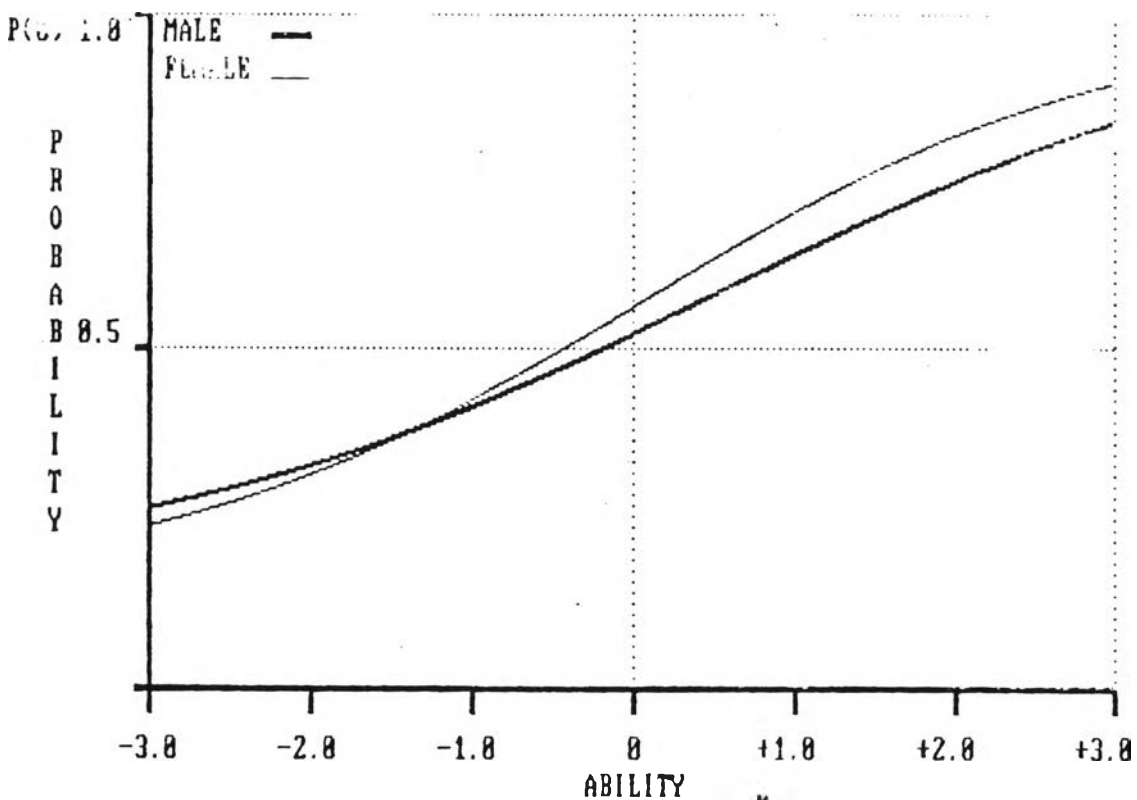


FIGURE 36 PLOT ITEM CHARACTERISTIC CURVE (no 60)

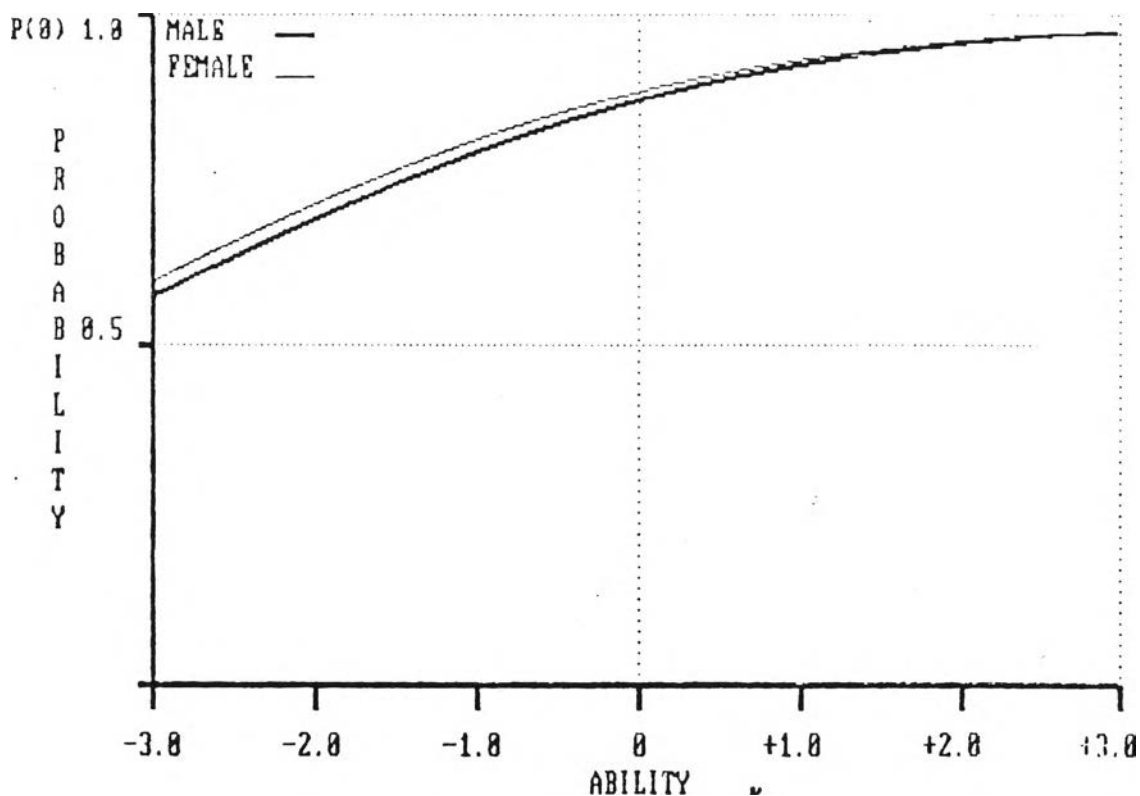


FIGURE 37 PLOT ITEM CHARACTERISTIC CURVE (ID 61)

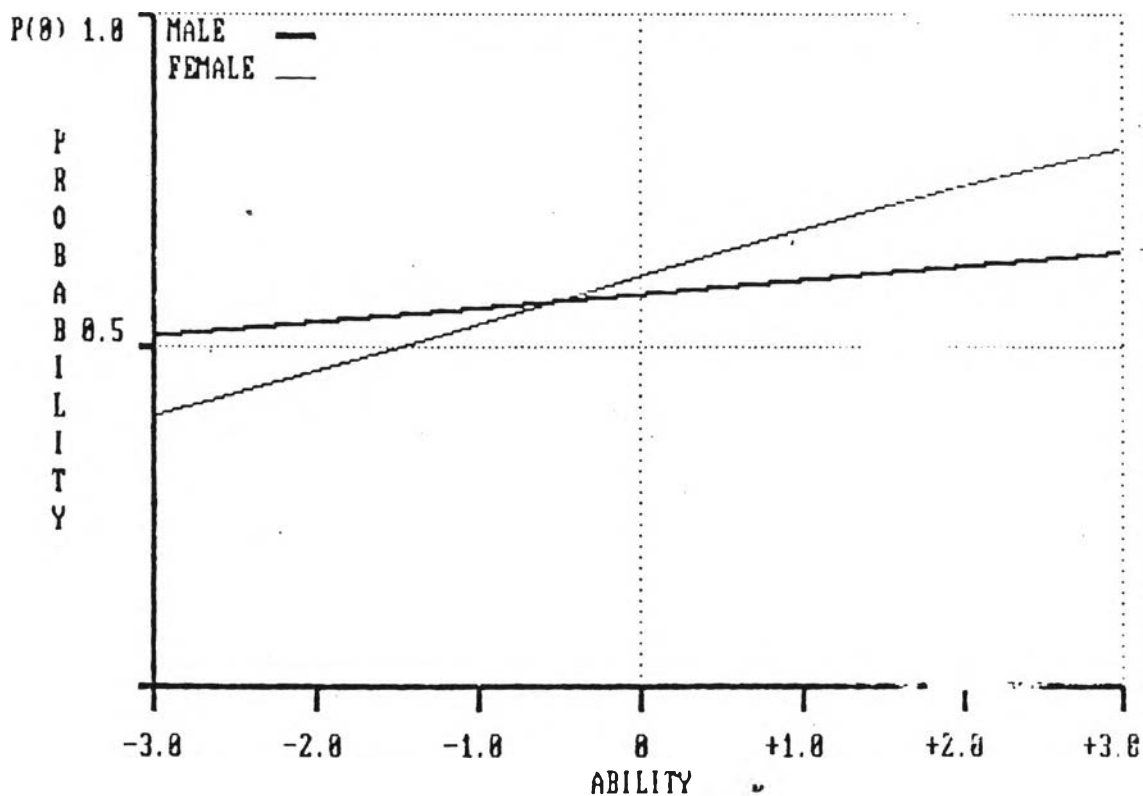


FIGURE 38 PLOT ITEM CHARACTERISTIC CURVE (ID 63)

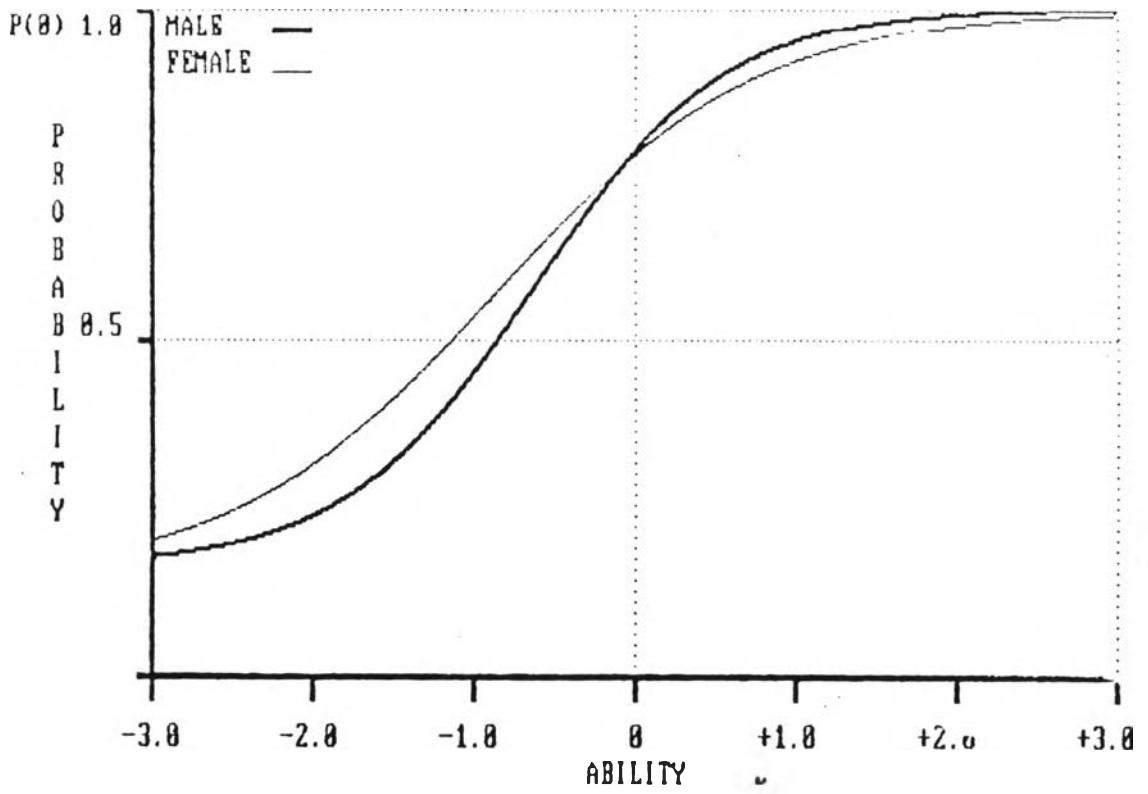


FIGURE 39 PLOT ITEM CHARACTERISTIC CURVE (ID 64)

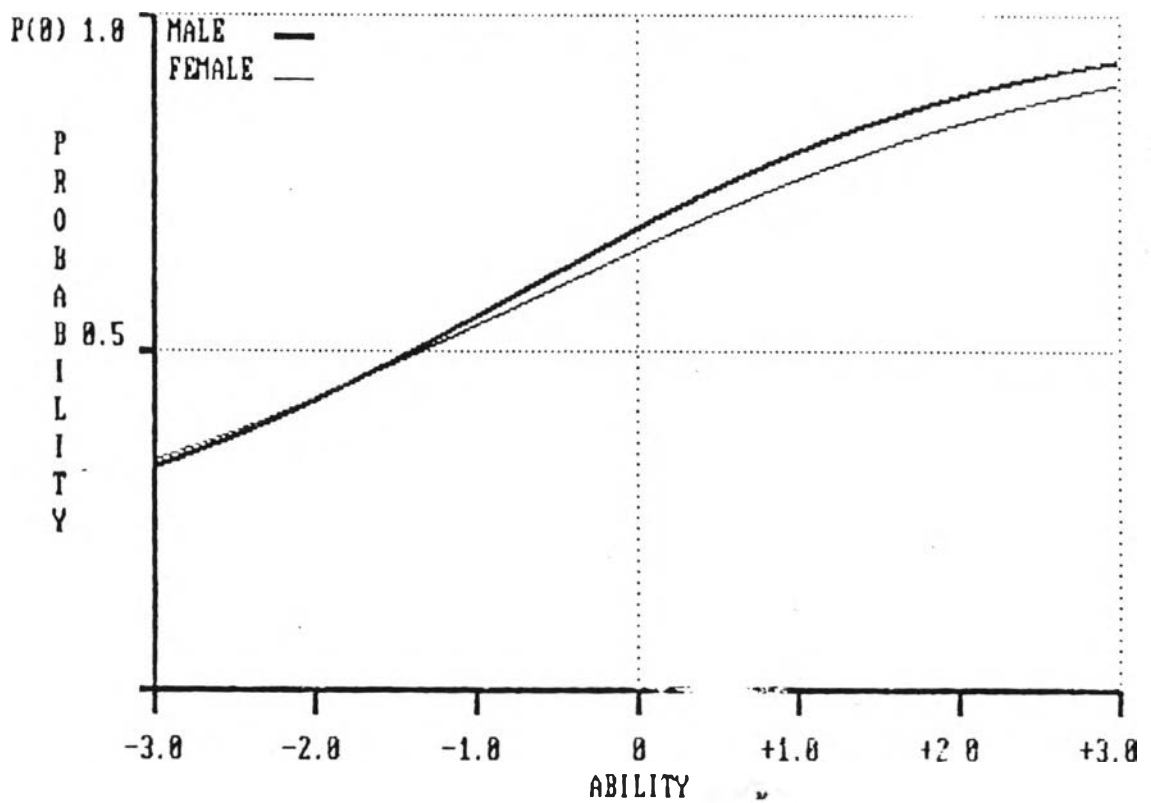


FIGURE 48 PLOT ITEM CHARACTERISTIC CURVE (ID 65)

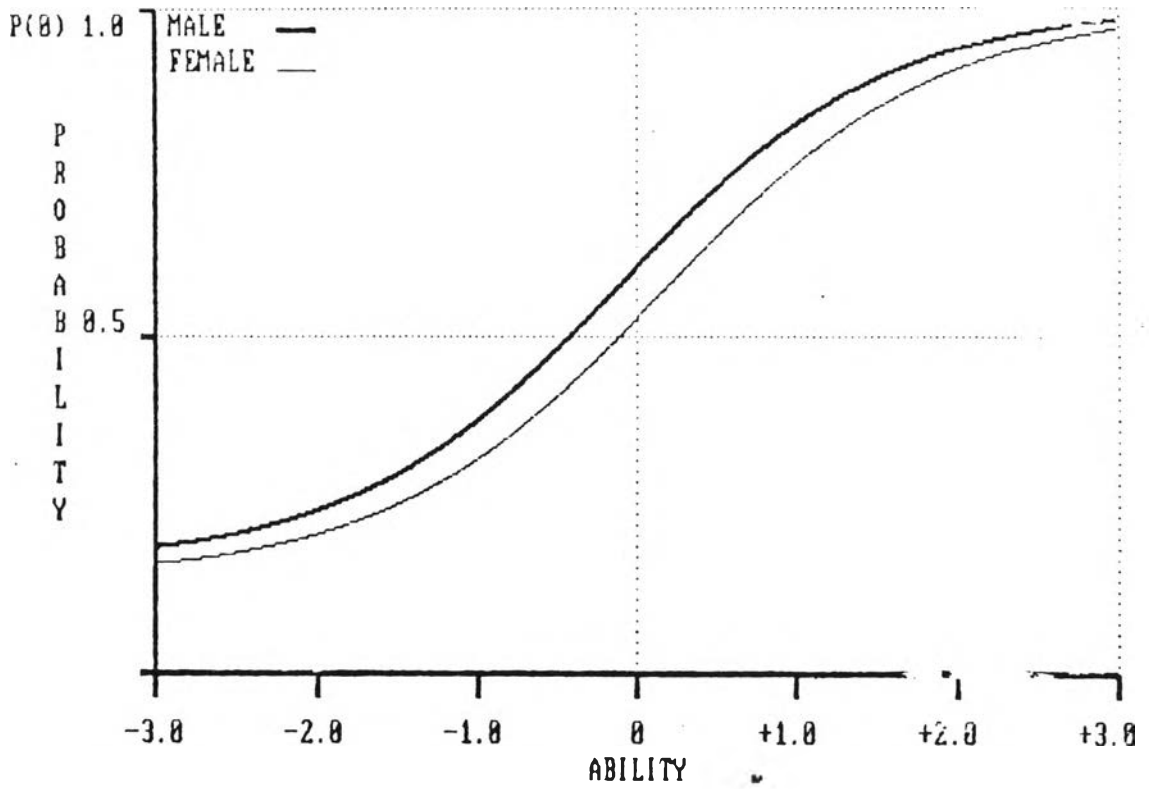


FIGURE 41 PLOT ITEM CHARACTERISTIC CURVE (n 66)

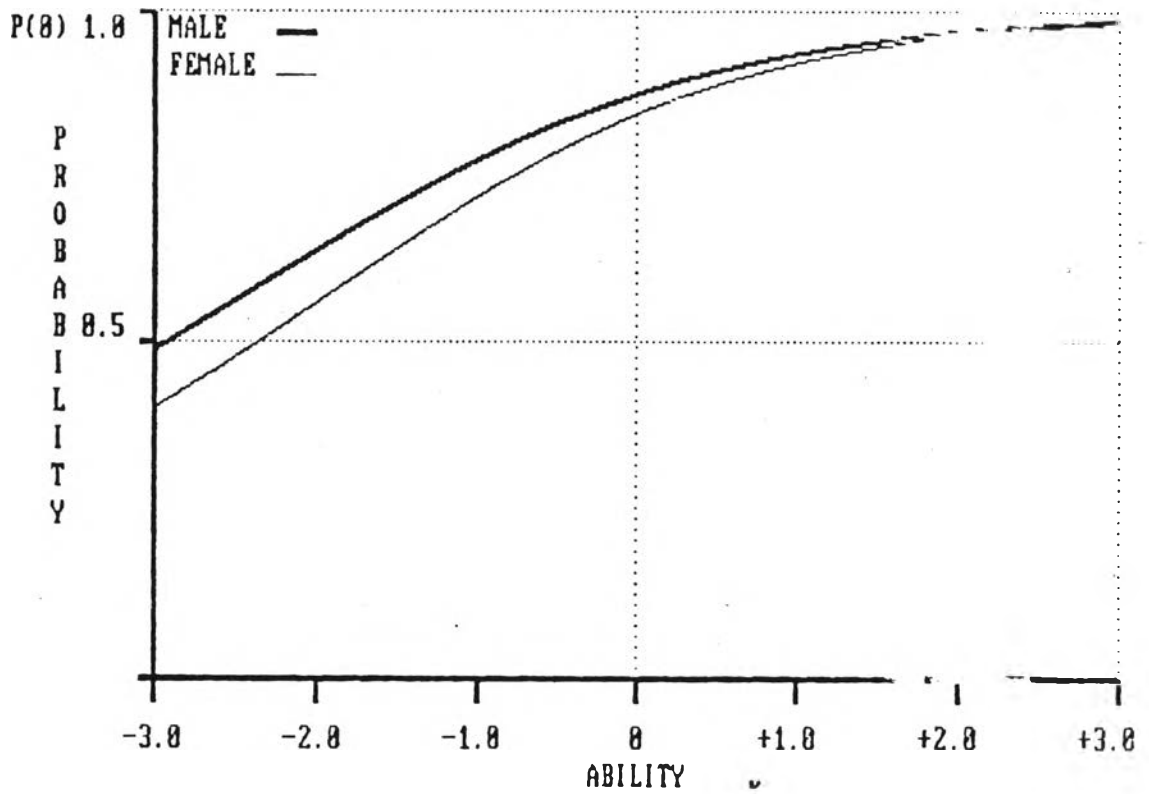


FIGURE 42 PLOT ITEM CHARACTERISTIC CURVE (n 67)

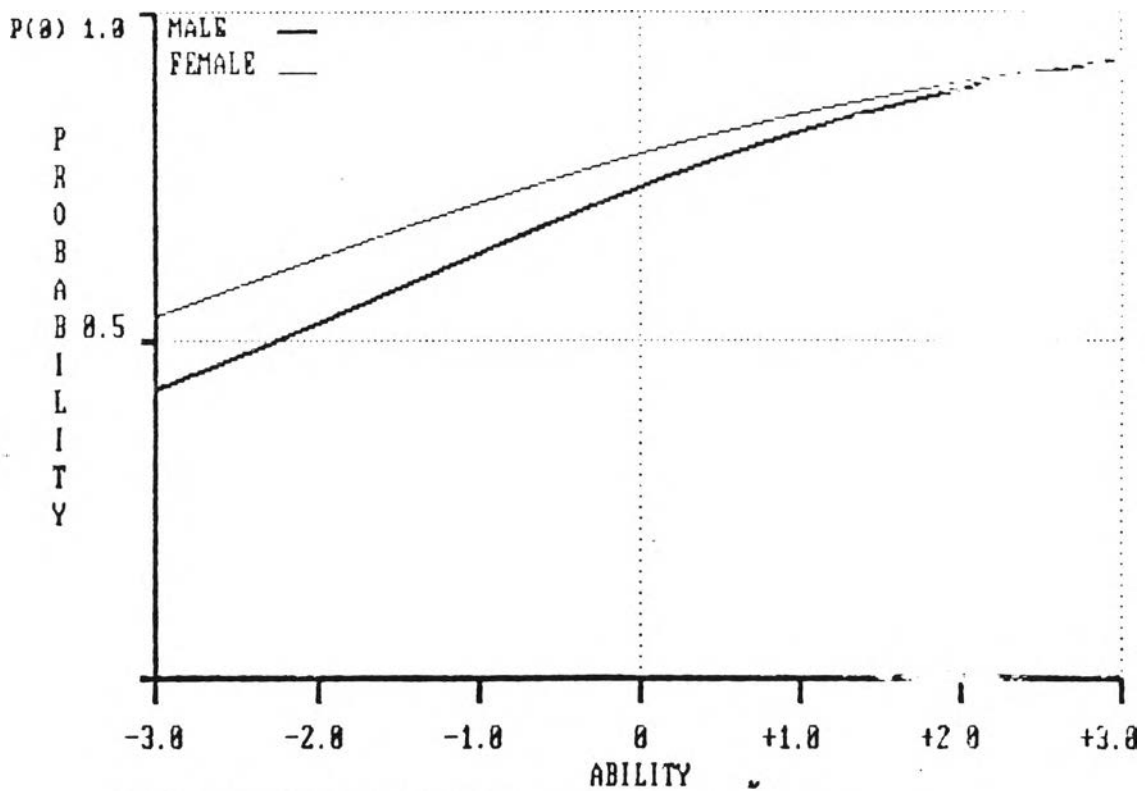


FIGURE 43 PLOT ITEM CHARACTERISTIC CURVE (ID 68)

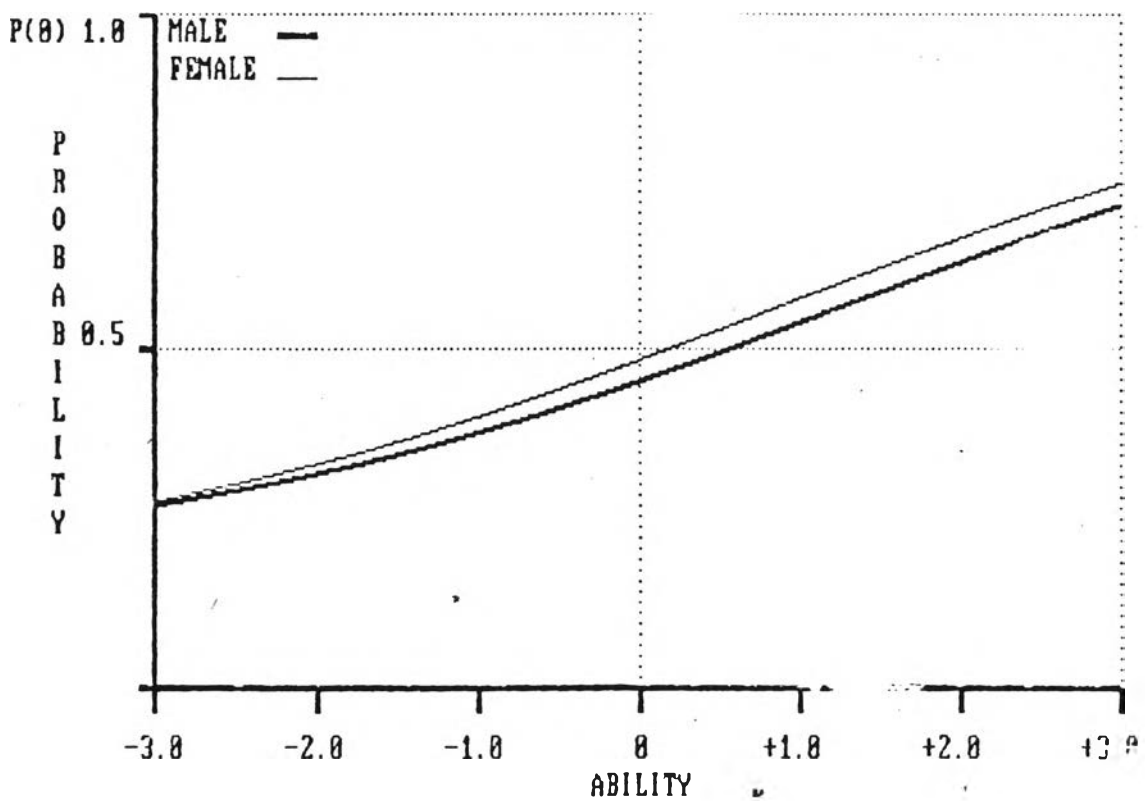


FIGURE 44 PLOT ITEM CHARACTERISTIC CURVE (ID 69)

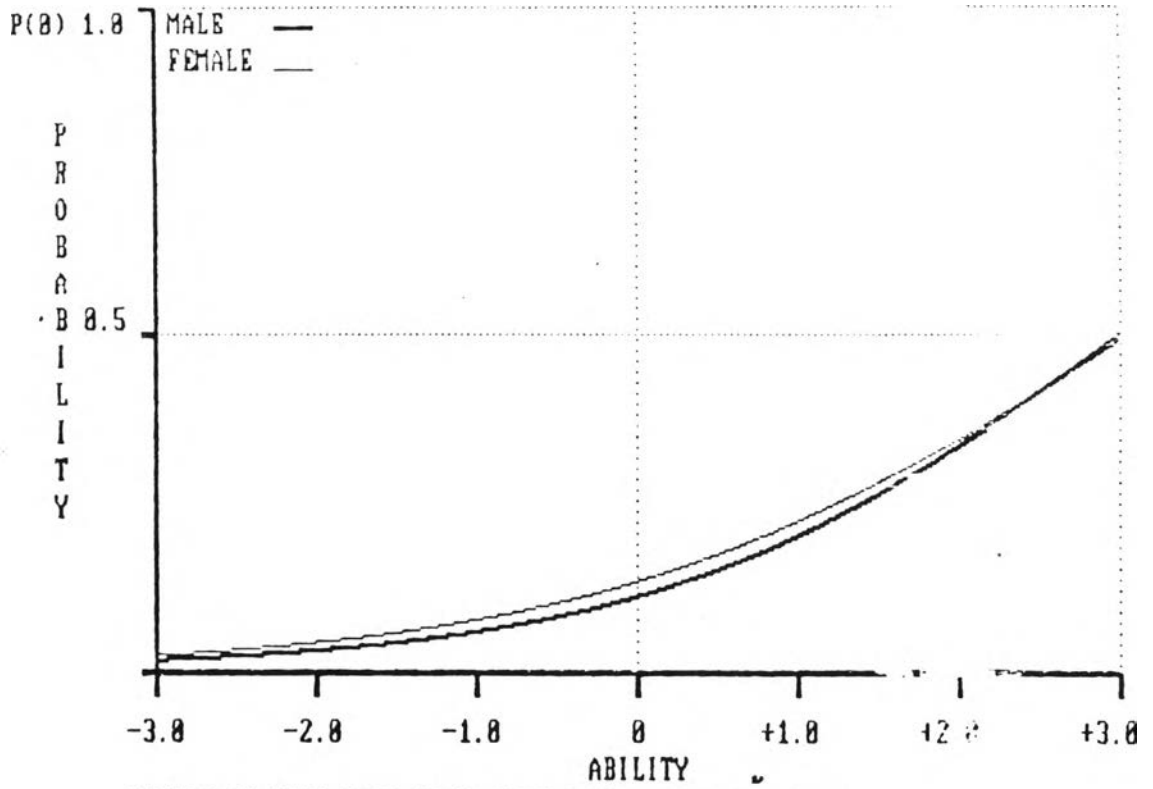


FIGURE 45 PLOT ITEM CHARACTERISTIC CURVE (ID 71)

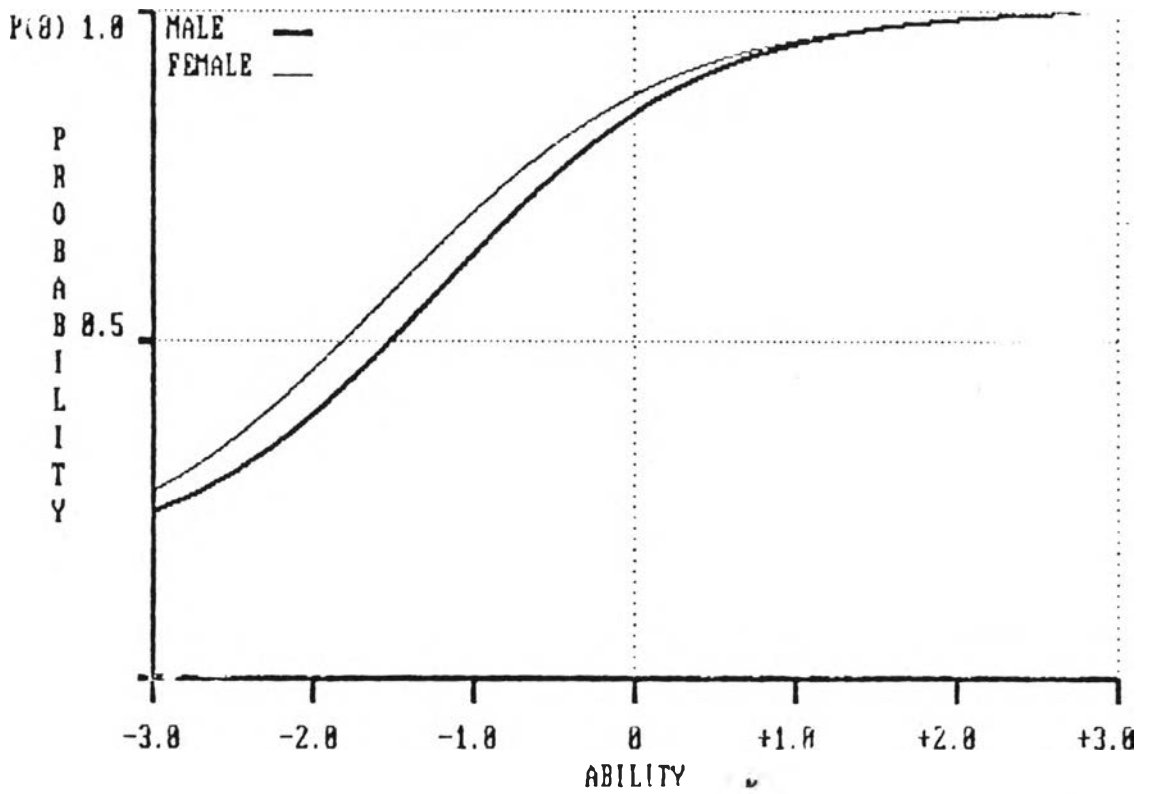


FIGURE 46 PLOT ITEM CHARACTERISTIC CURVE (ID 73)



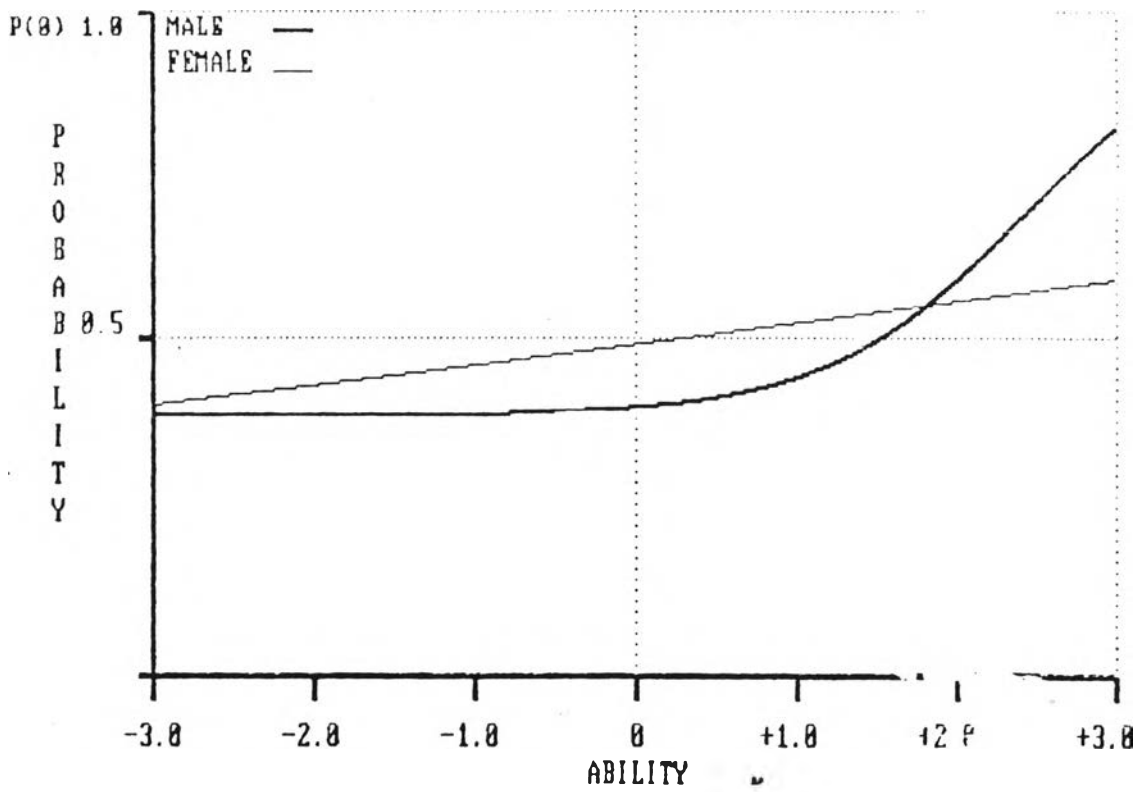


FIGURE 47 PLOT ITEM CHARACTERISTIC CURVE (no 74)

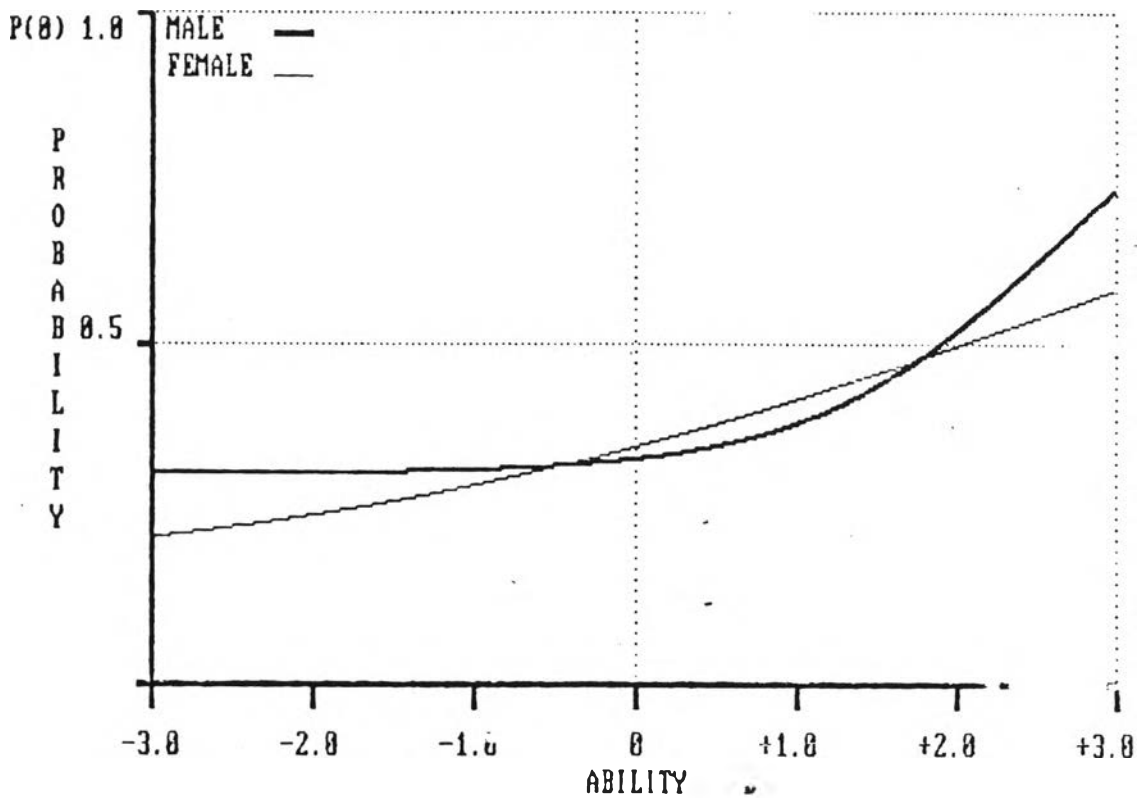


FIGURE 48 PLOT ITEM CHARACTERISTIC CURVE (no 76)

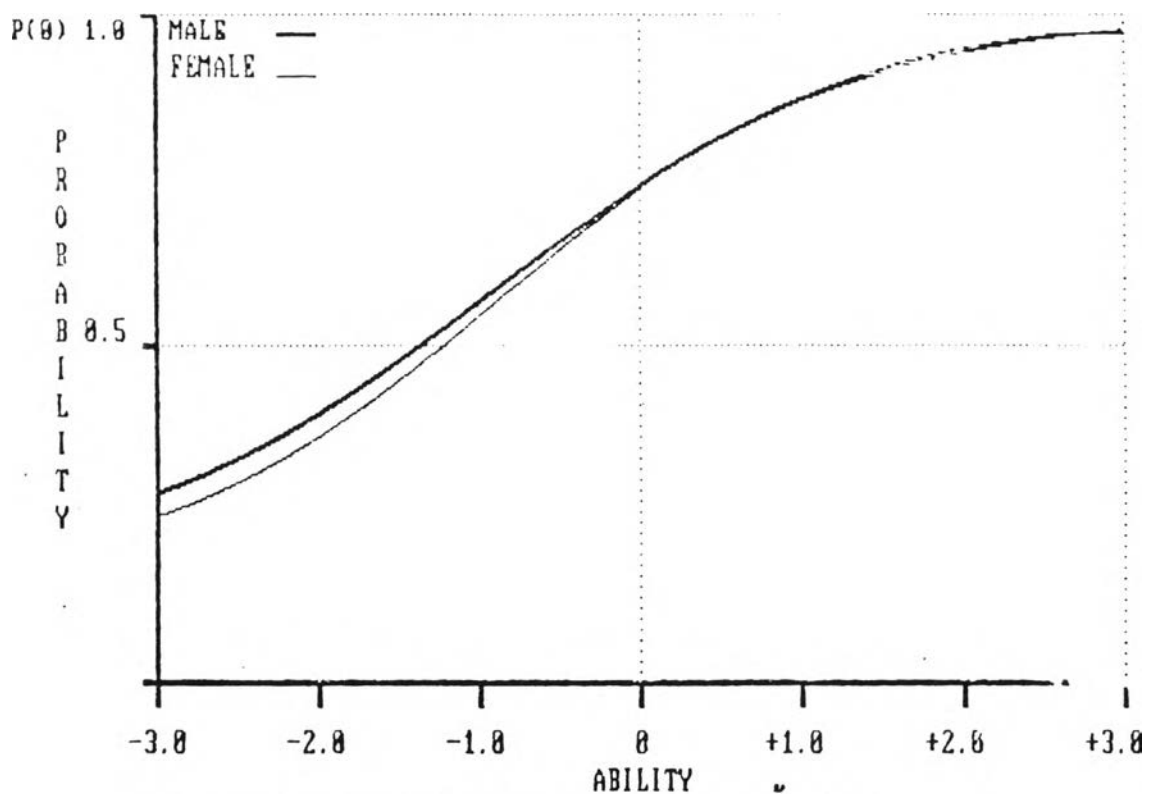


FIGURE 49 PLOT ITEM CHARACTERISTIC CURVE (Item 77)

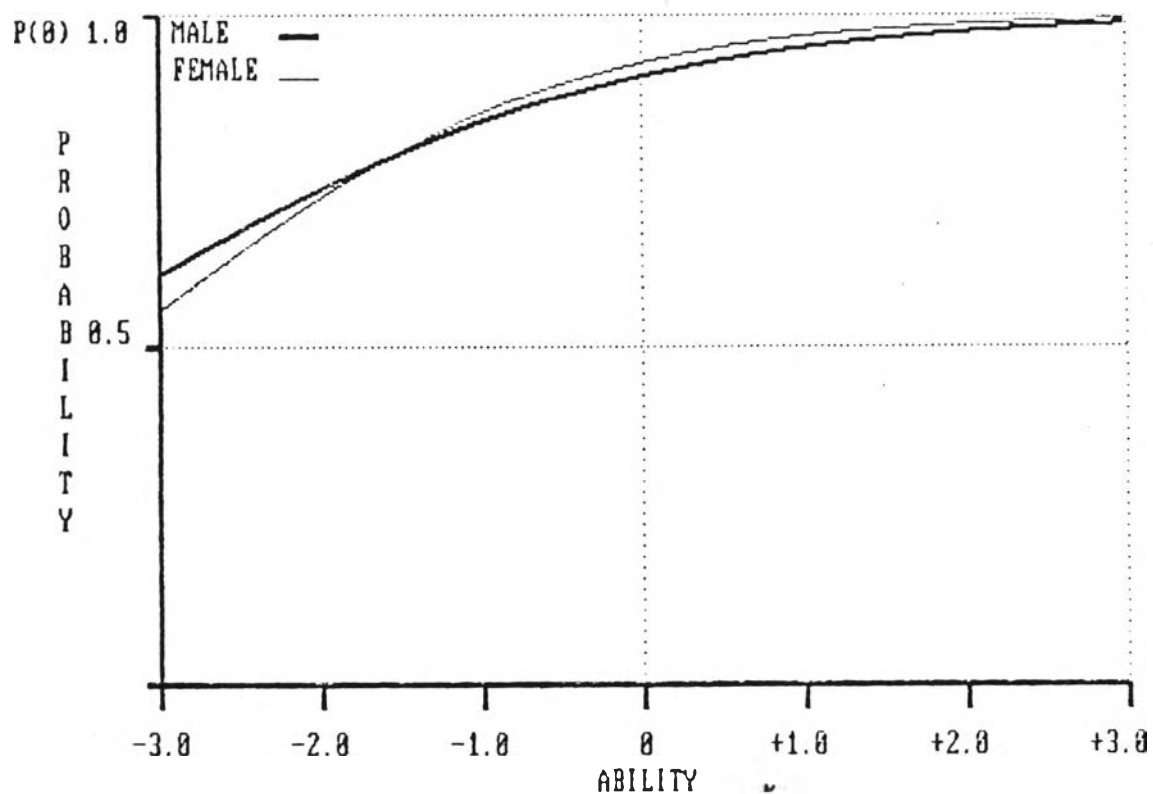


FIGURE 50 PLOT ITEM CHARACTERISTIC CURVE (Item 78)

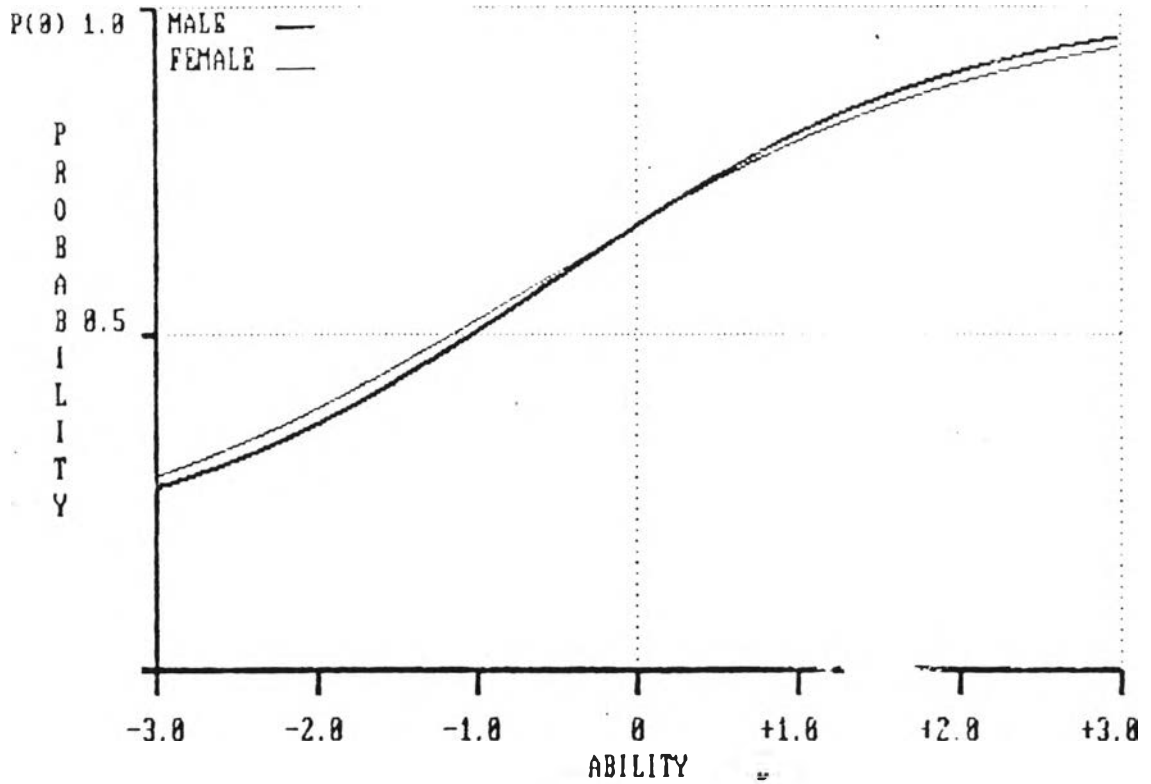


FIGURE 51 PLOT ITEM CHARACTERISTIC CURVE (79)

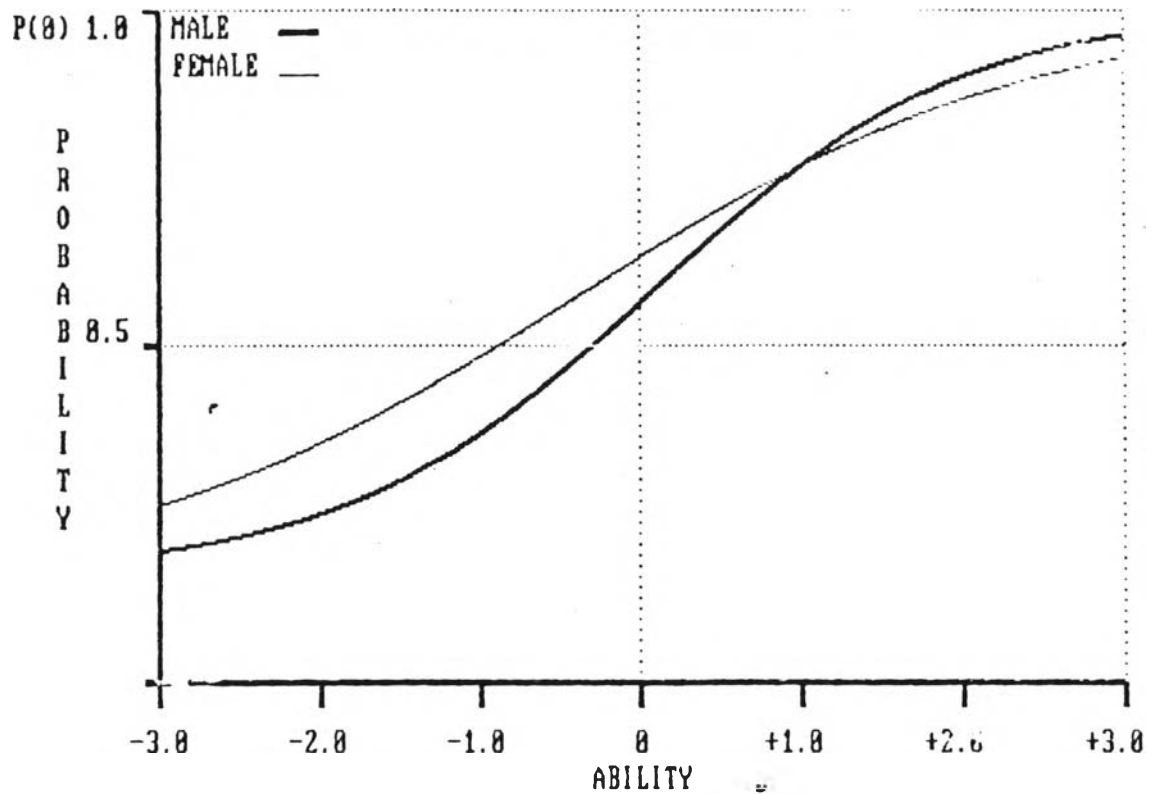


FIGURE 52 PLOT ITEM CHARACTERISTIC CURVE (80)

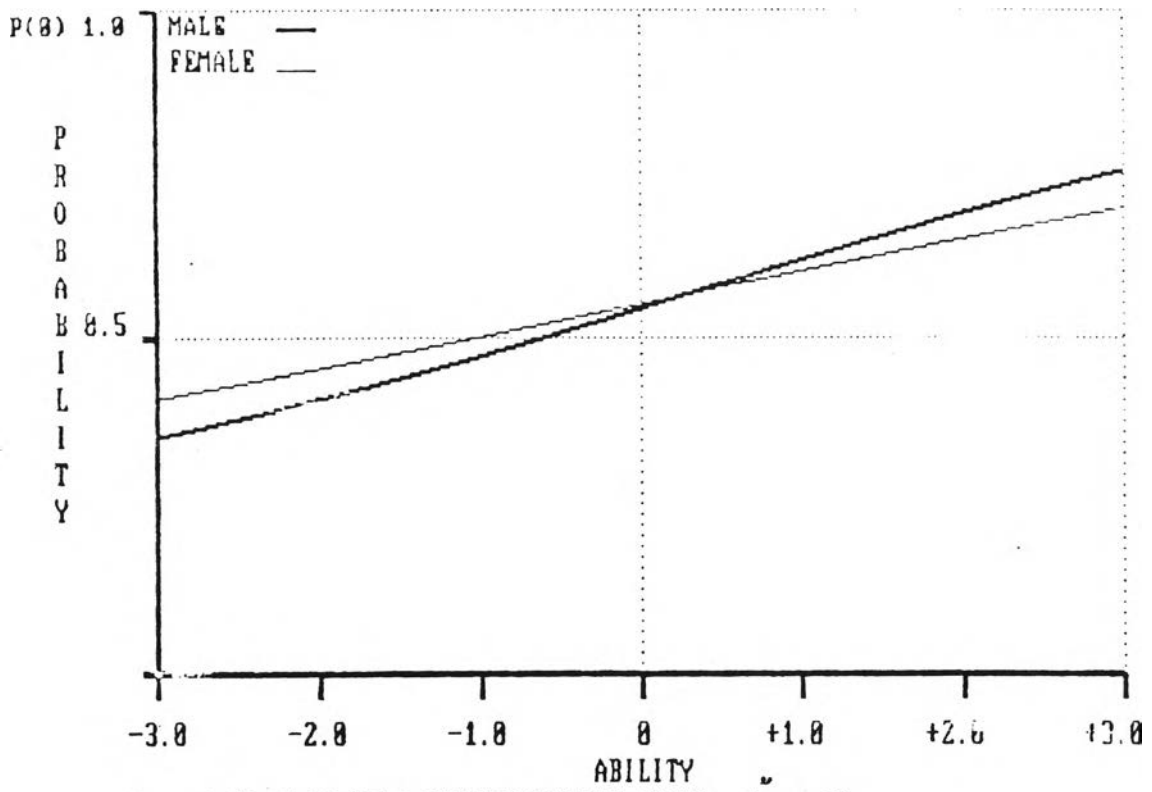


FIGURE 53 PLOT ITEM CHARACTERISTIC CURVE (no 82)

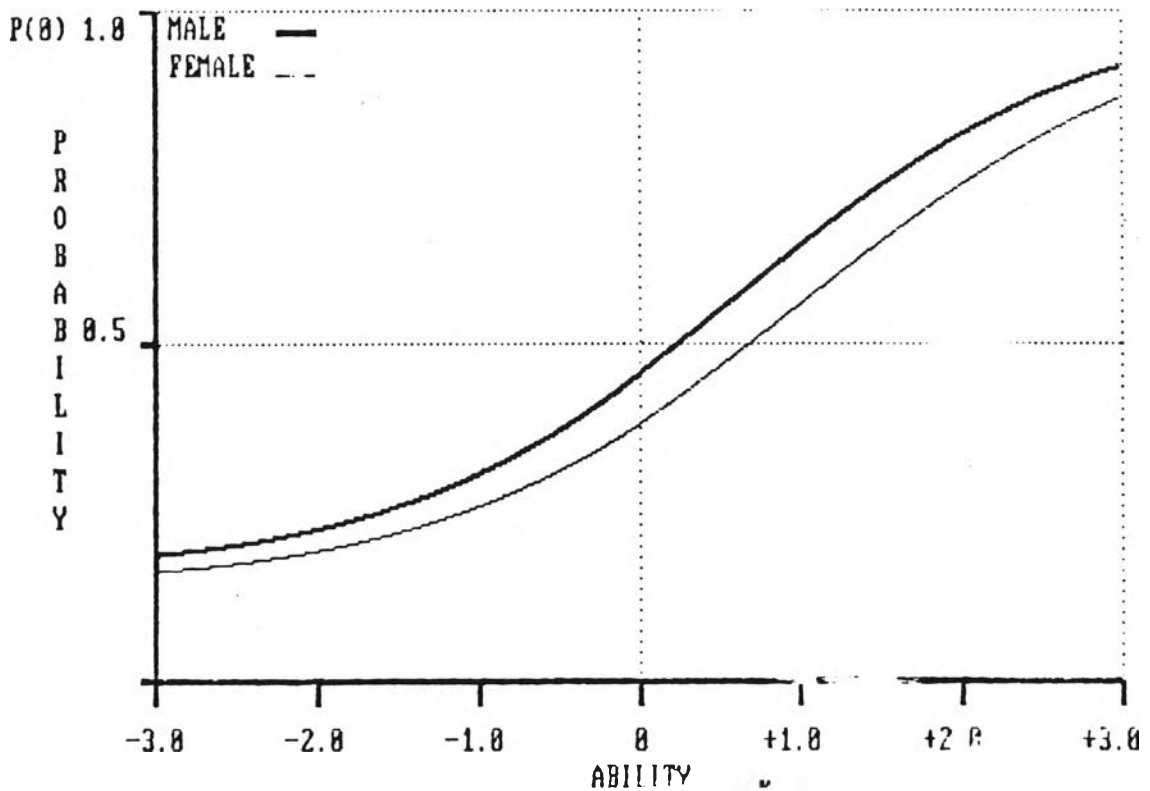


FIGURE 54 PLOT ITEM CHARACTERISTIC CURVE (no 84)

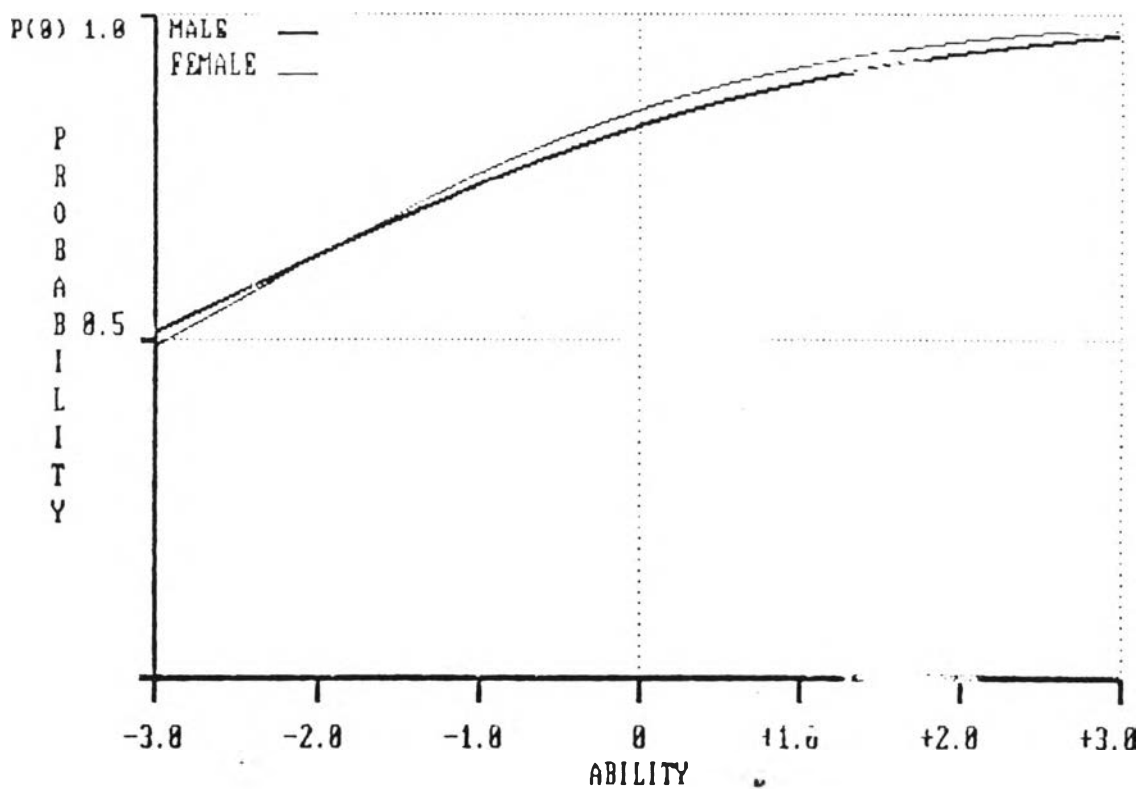


FIGURE 55 PLOT ITEM CHARACTERISTIC CURVE (8086)

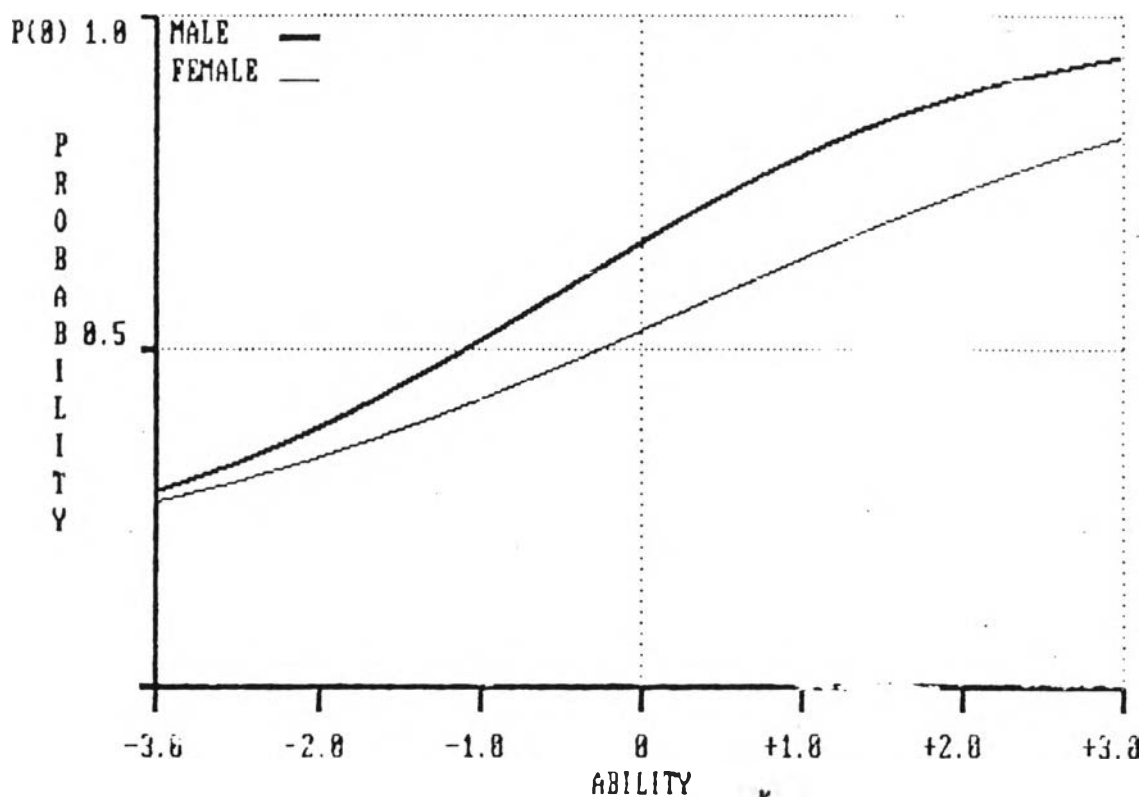


FIGURE 56 PLOT ITEM CHARACTERISTIC CURVE (8088)

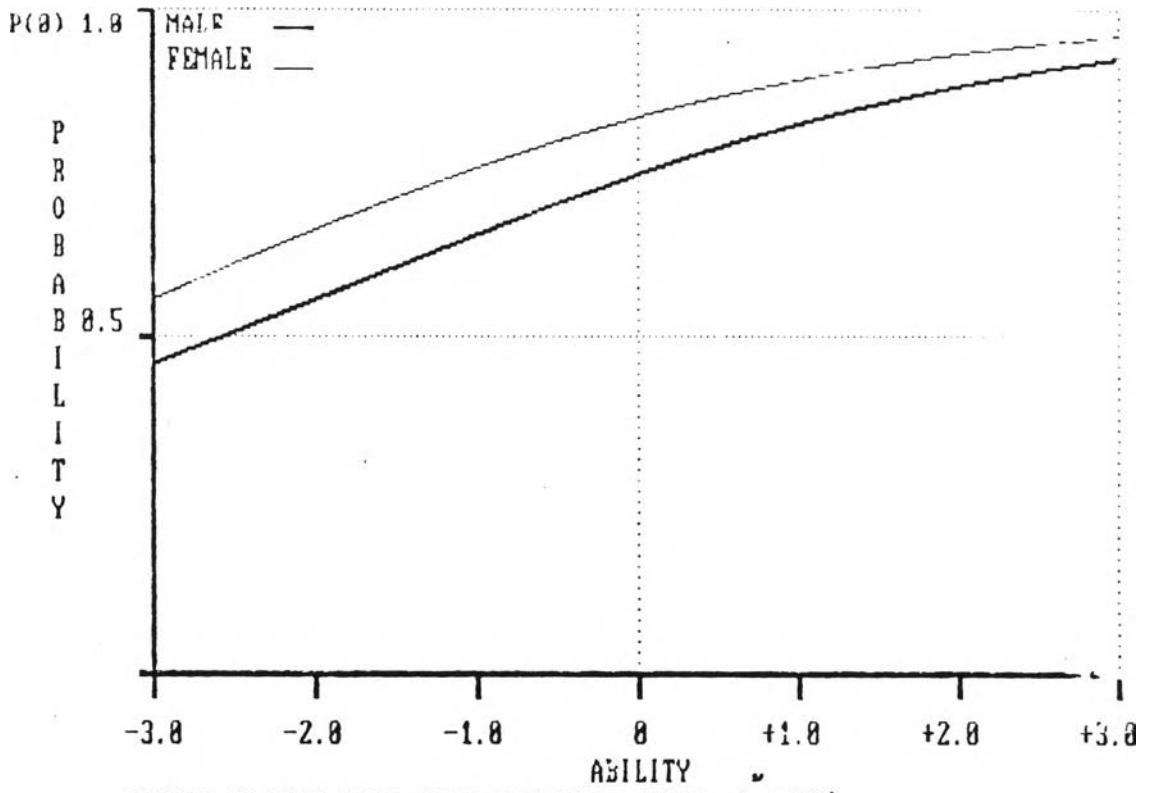


FIGURE 57 PLOT ITEM CHARACTERISTIC CURVE (Item 89)

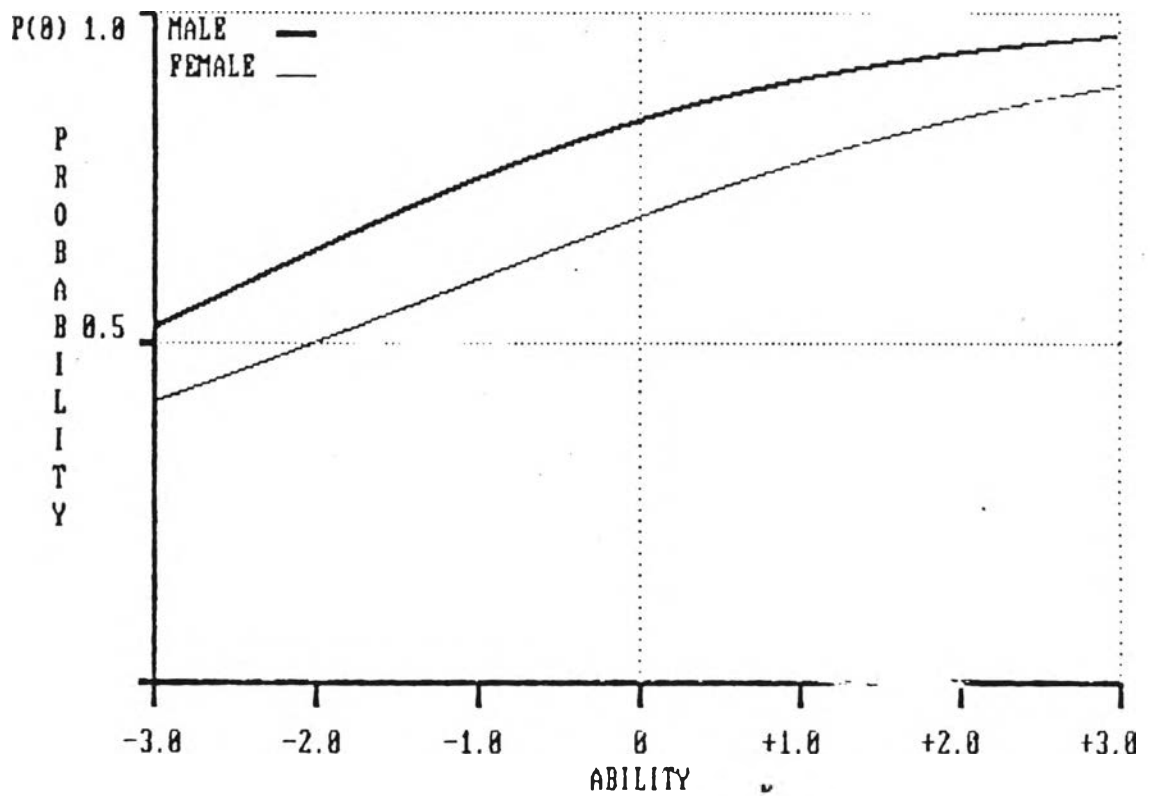


FIGURE 58 PLOT ITEM CHARACTERISTIC CURVE (Item 90)

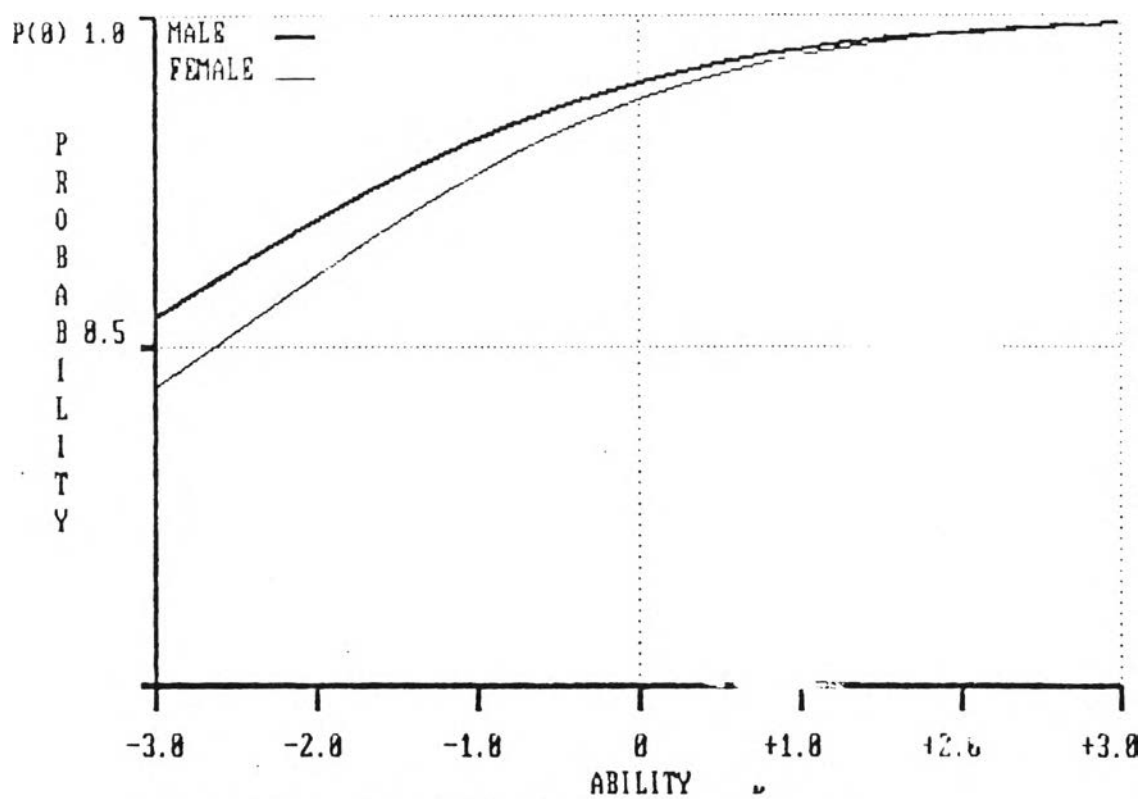


FIGURE 59 PLOT ITEM CHARACTERISTIC CURVE (ID 91)

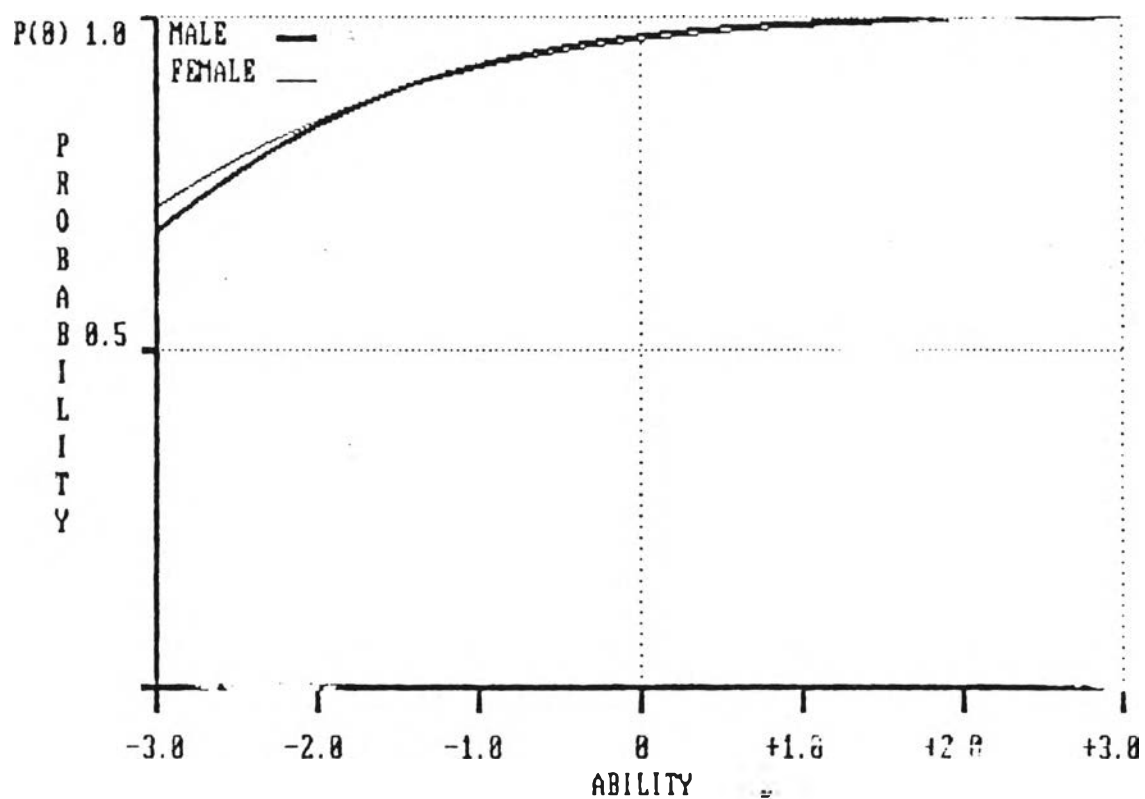


FIGURE 68 PLOT ITEM CHARACTERISTIC CURVE (ID 92)

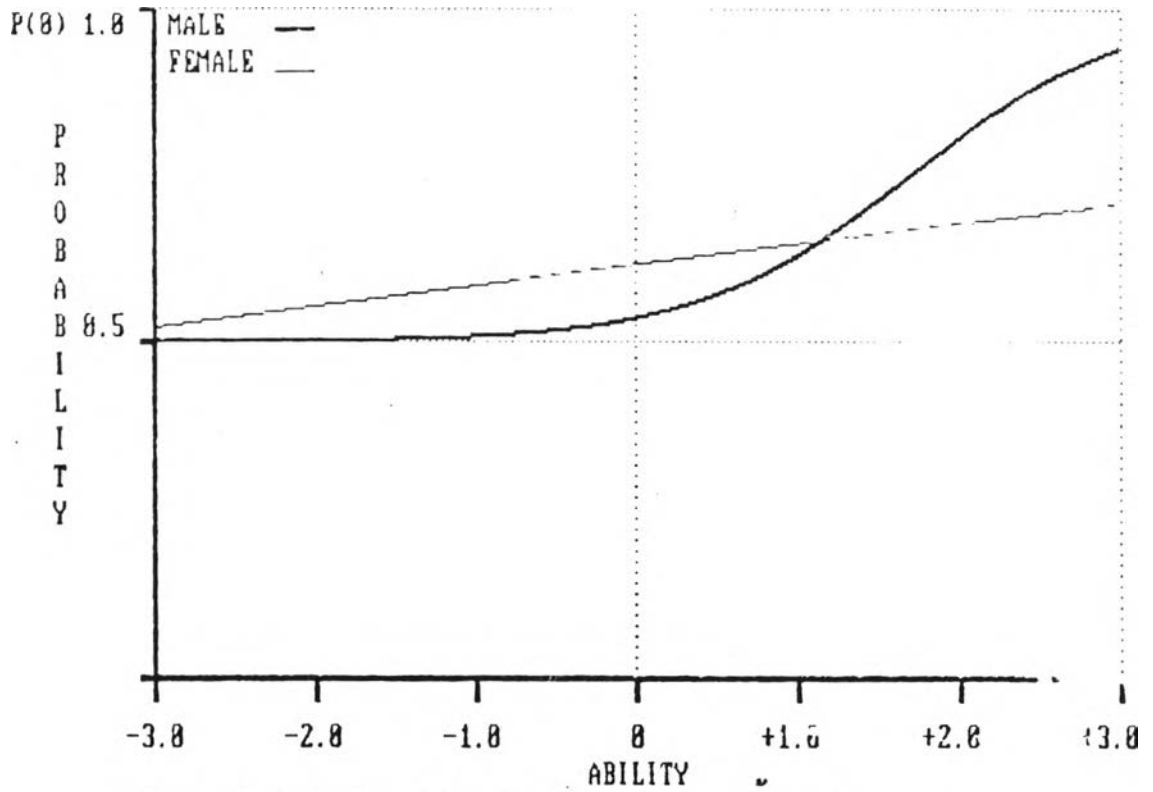


FIGURE 61 PLOT ITEM CHARACTERISTIC CURVE (no 95)

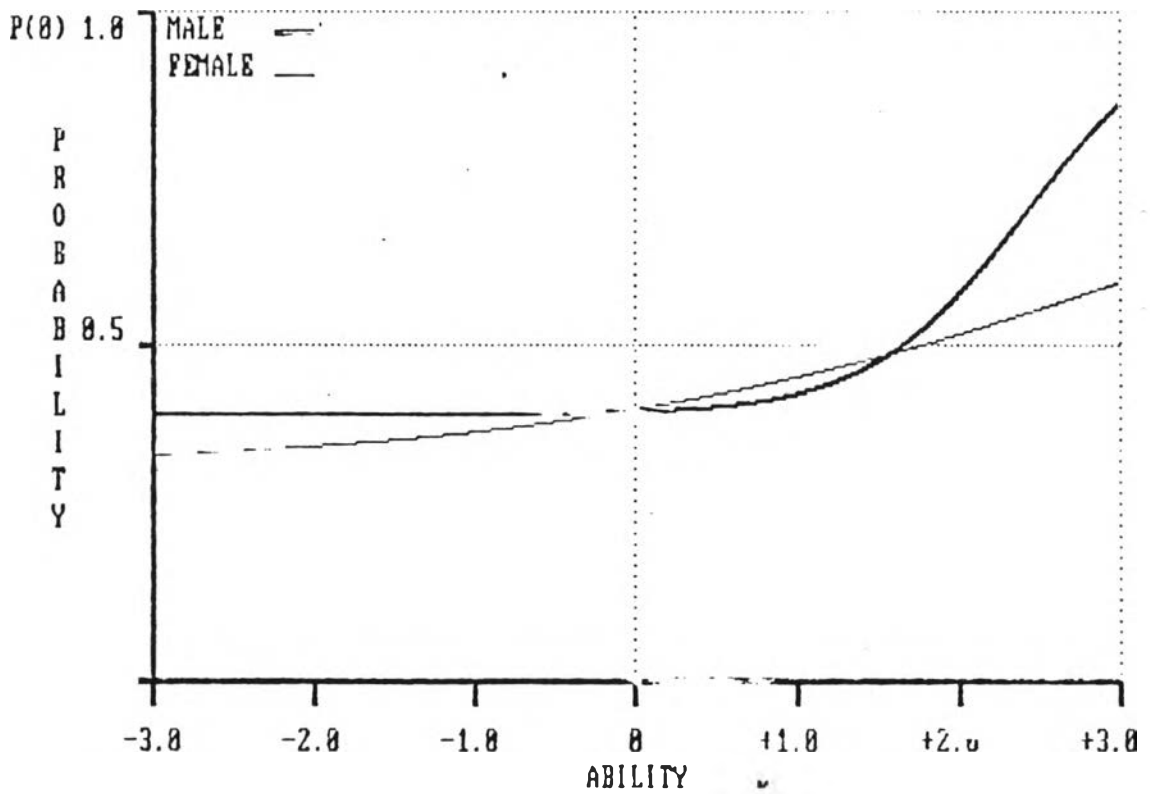


FIGURE 62 PLOT ITEM CHARACTERISTIC CURVE (no 97)



โค้งลักษณะ รือสอบจากแบบสองหน้าที 2

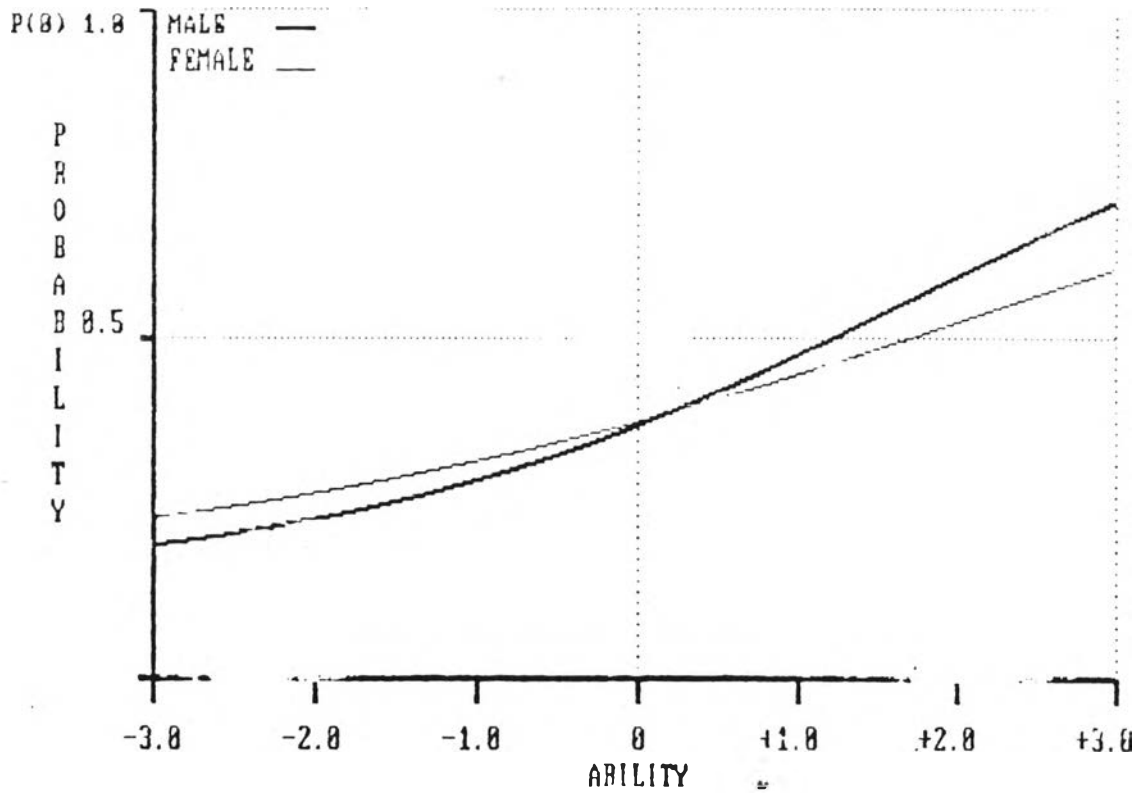


FIGURE 63 PLOT ITEM CHARACTERISTIC CURVE (FIG 1)

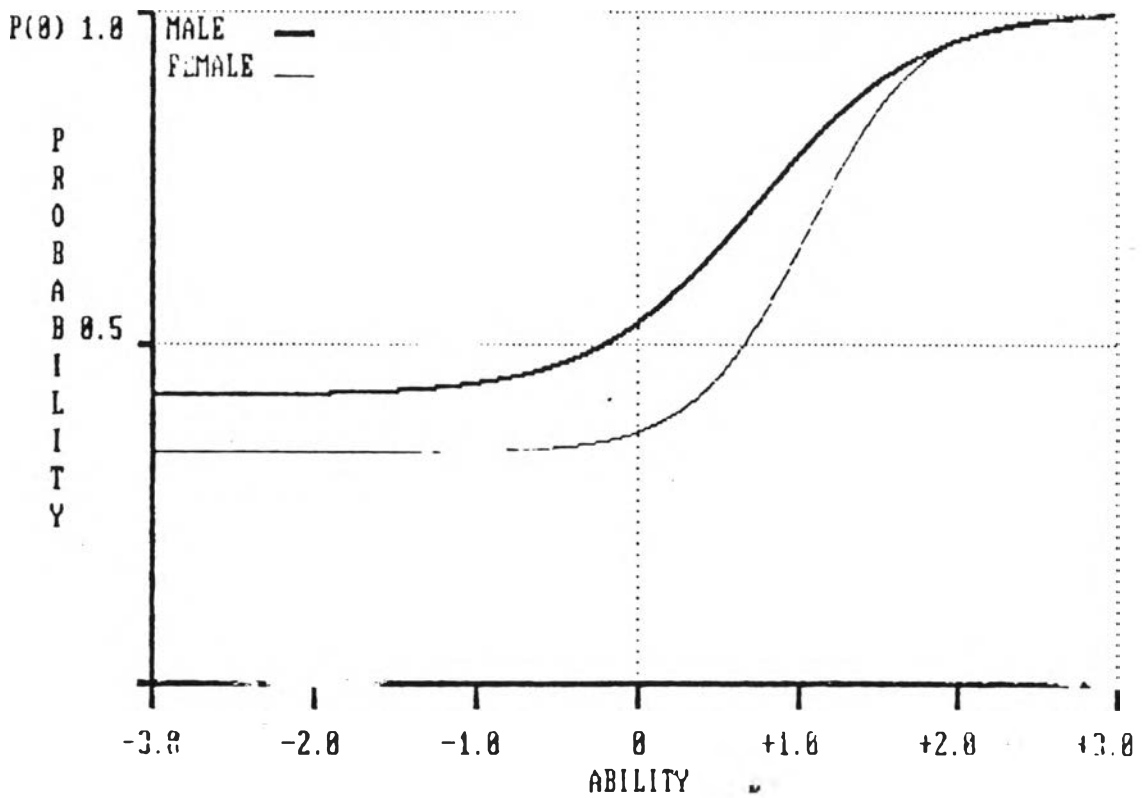


FIGURE 64 PLOT ITEM CHARACTERISTIC CURVE (FIG 2)

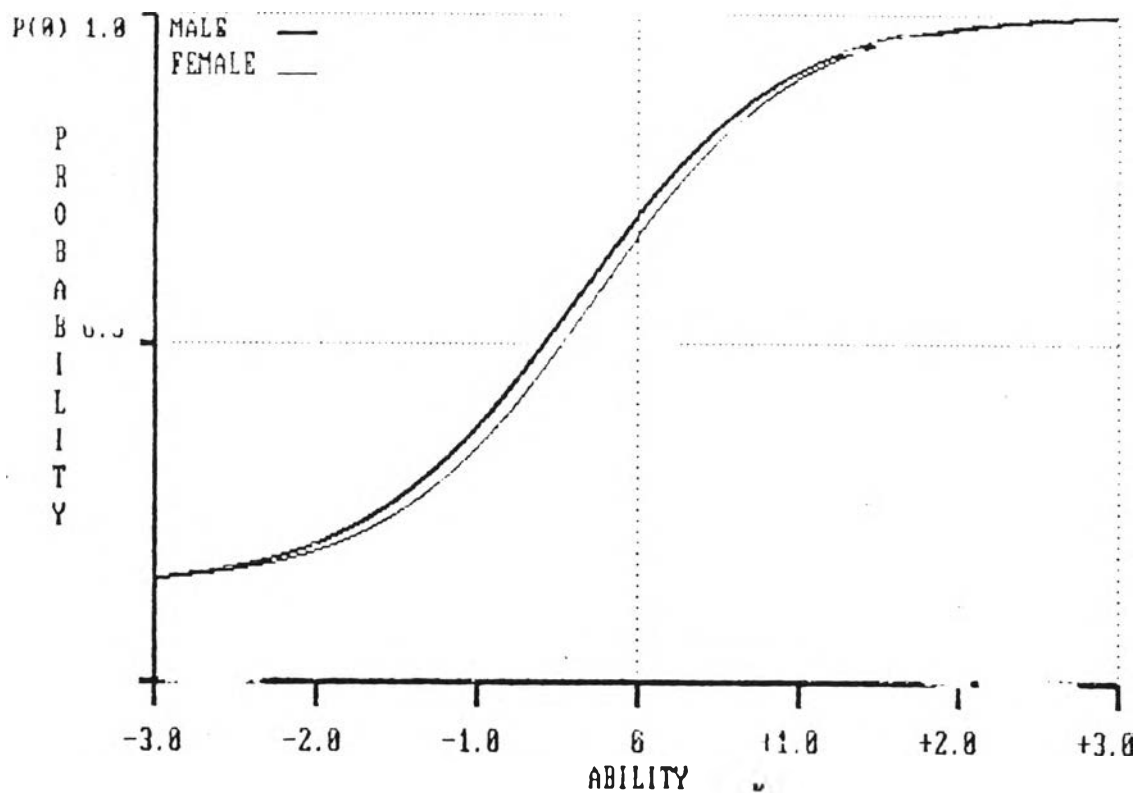


FIGURE 65 PLOT ITEM CHARACTERISTIC CURVE (Item 3)

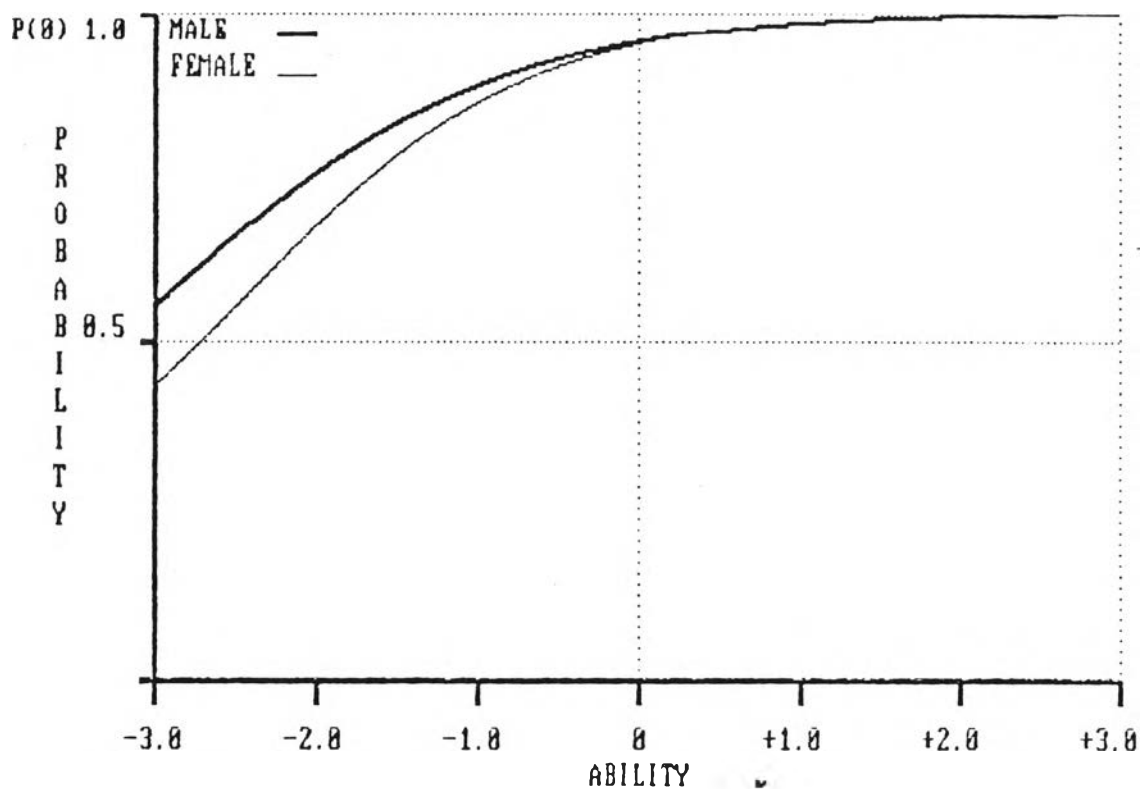


FIGURE 66 PLOT ITEM CHARACTERISTIC CURVE (Item 4)

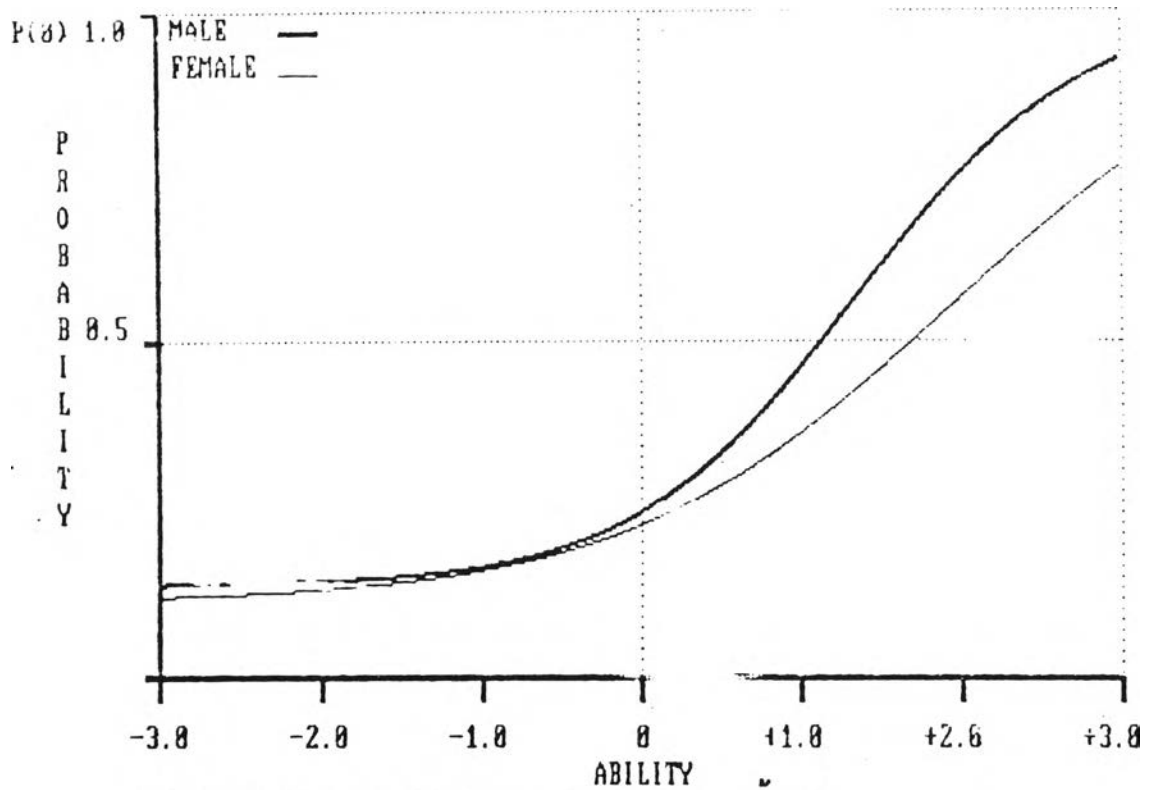


FIGURE 67 PLOT ITEM CHARACTERISTIC CURVE (TABLE 5)

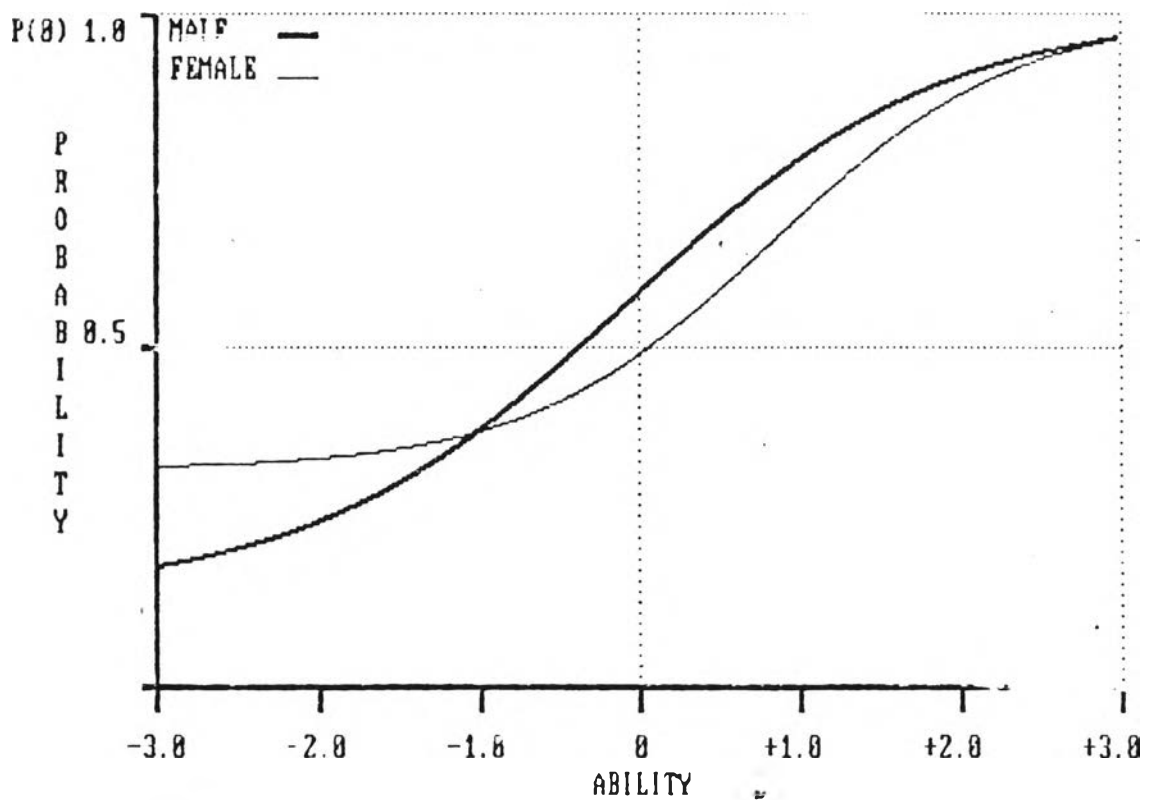


FIGURE 68 PLOT ITEM CHARACTERISTIC CURVE (TABLE 6)

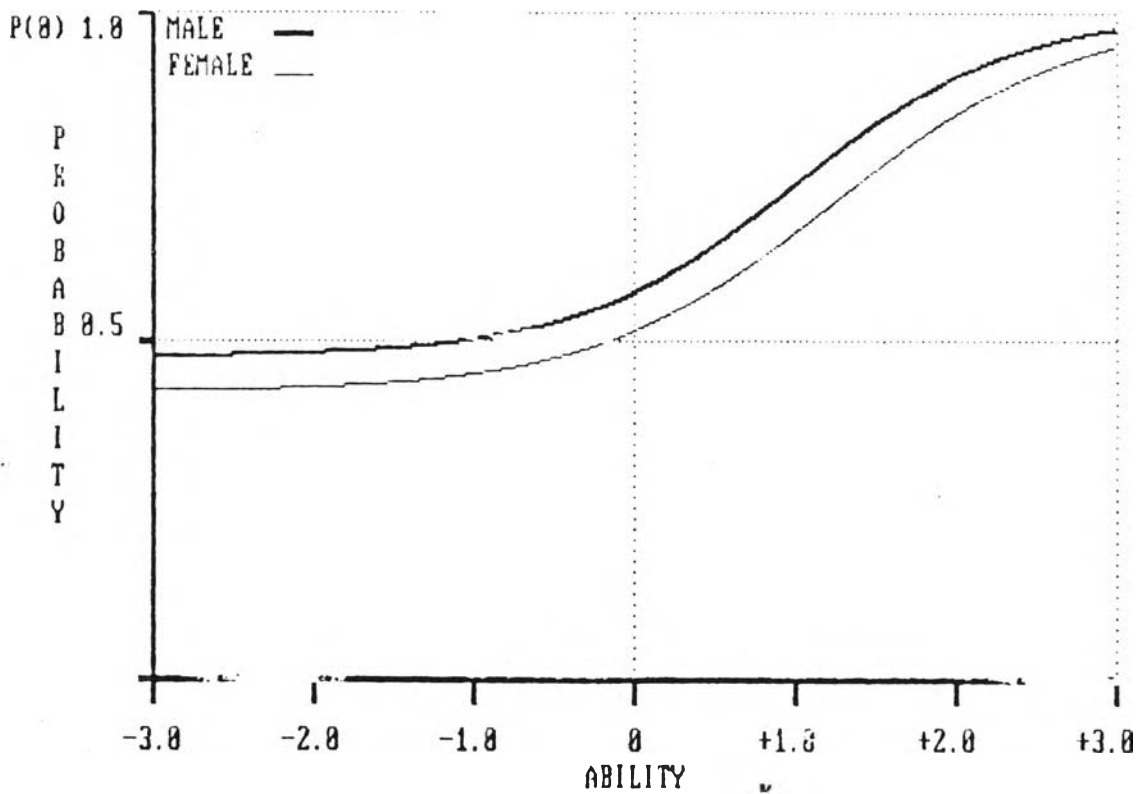


FIGURE 69 PLOT ITEM CHARACTERISTIC CURVE (807)

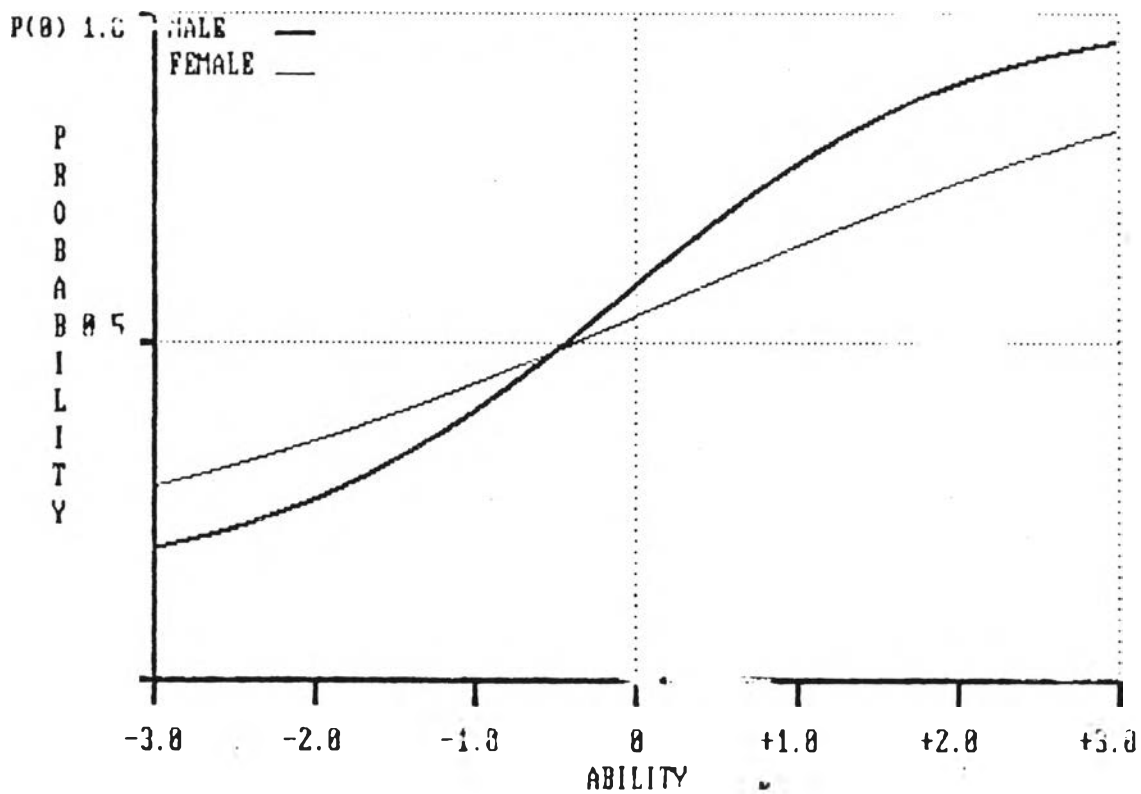


FIGURE 78 PLOT ITEM CHARACTERISTIC CURVE (808)

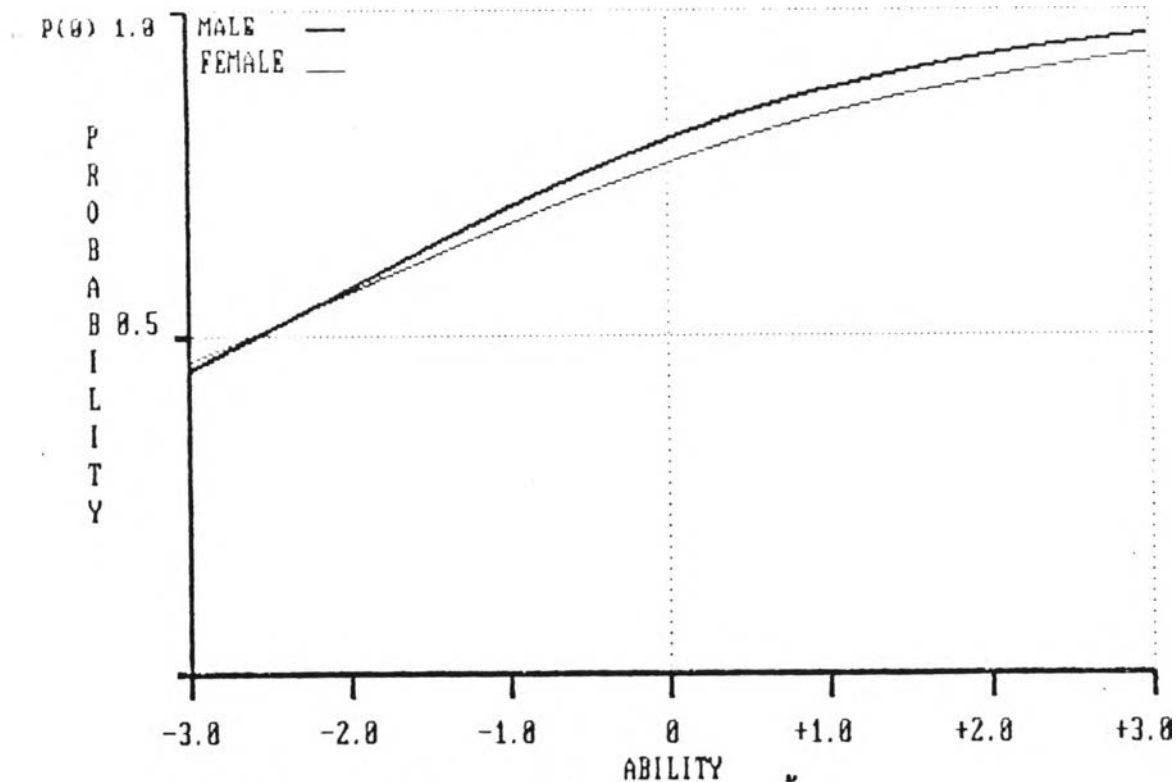


FIGURE 71 PLOT ITEM CHARACTERISTIC CURVE (item 9)

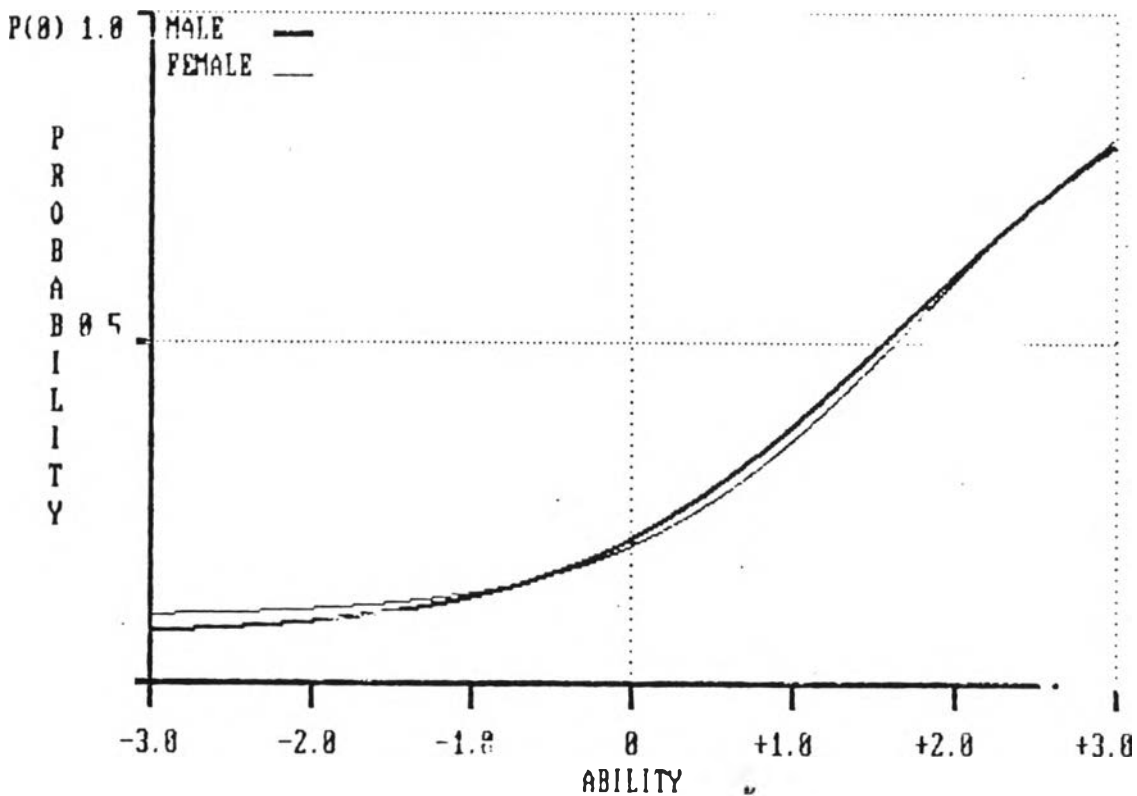


FIGURE 72 PLOT ITEM CHARACTERISTIC CURVE (item 10)

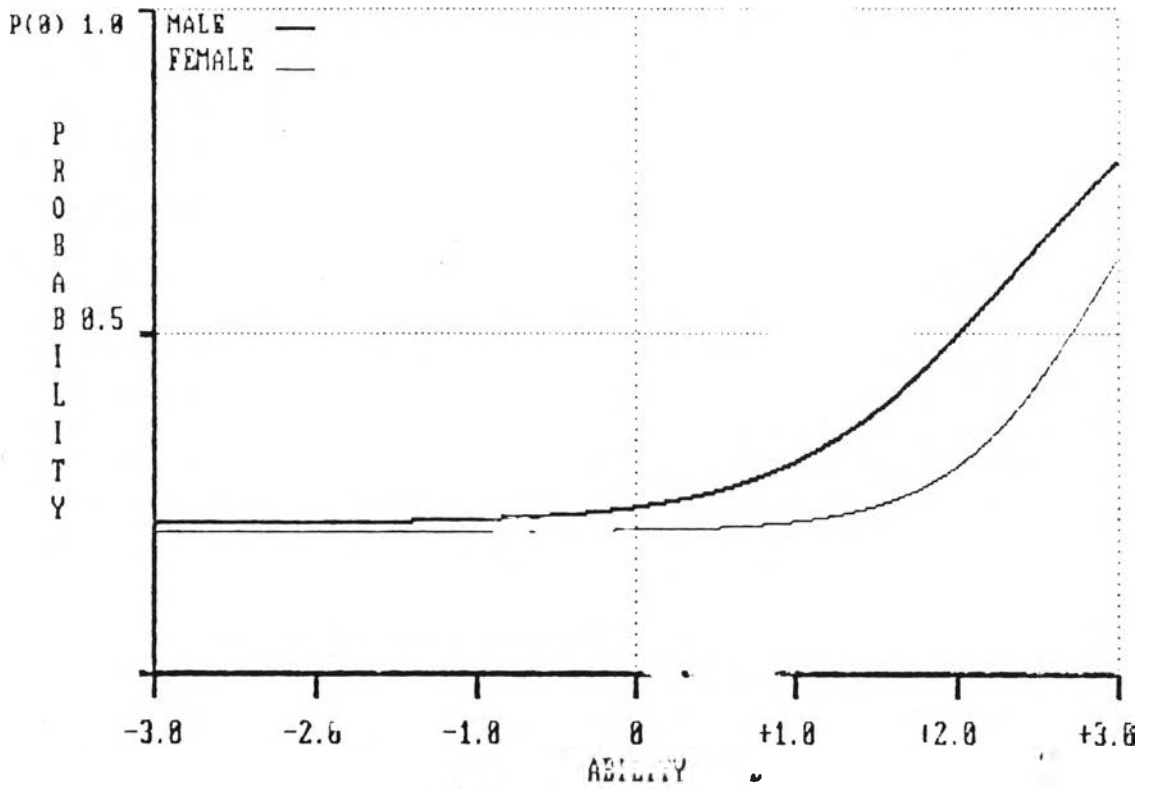


FIGURE 73 PLOT ITEM CHARACTERISTIC CURVE (sigma D 11)

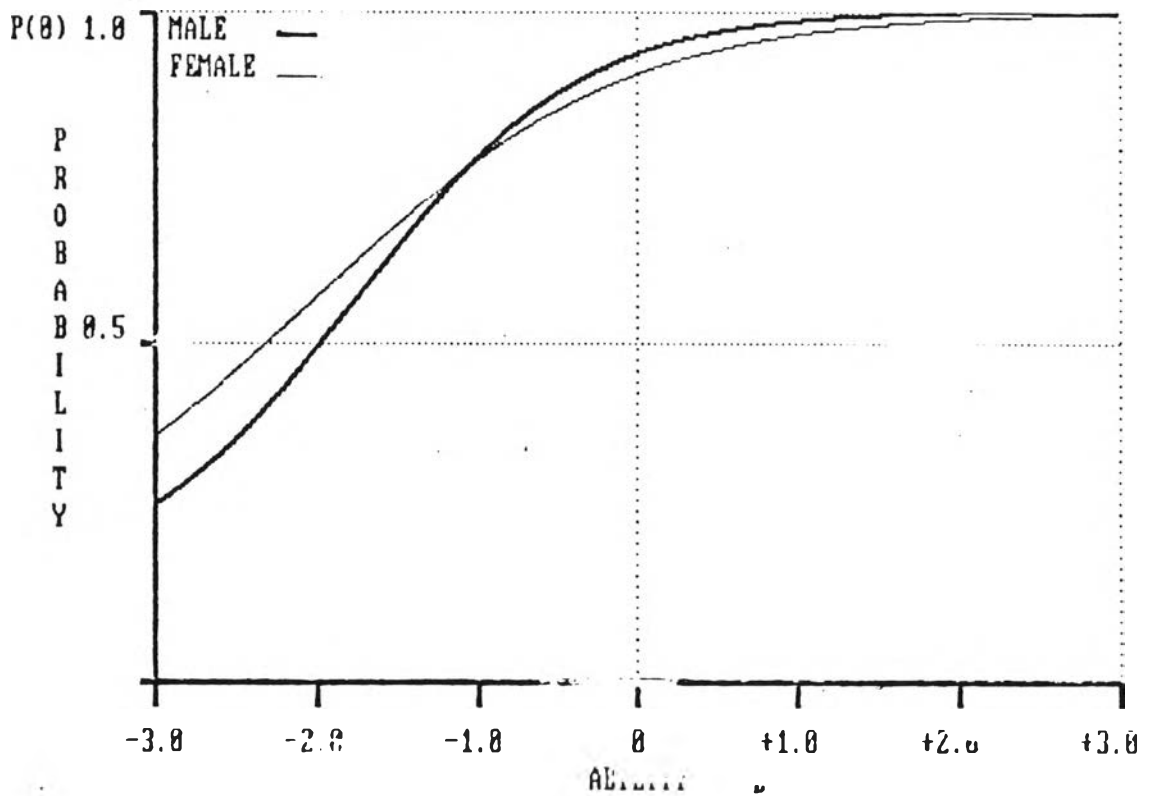


FIGURE 74 PLOT ITEM CHARACTERISTIC CURVE (sigma D 12)

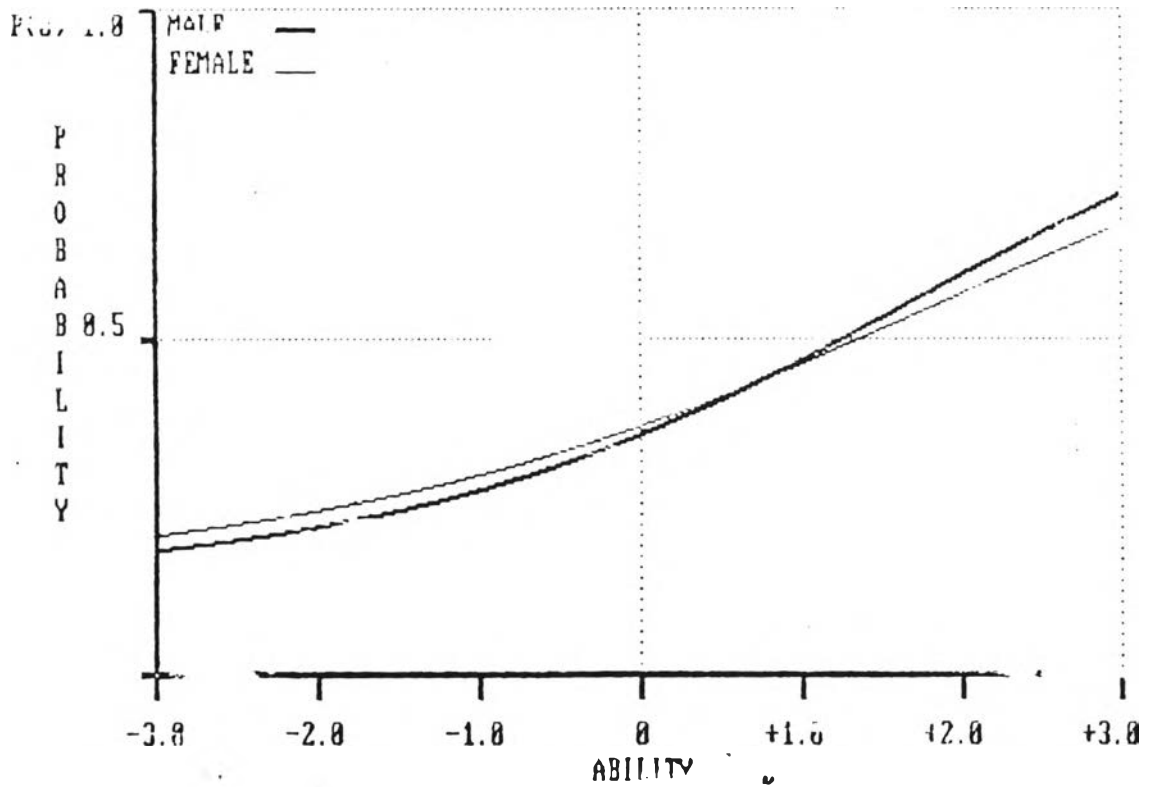


FIGURE 75 PLOT ITEM CHARACTERISTIC CURVE (item 13)

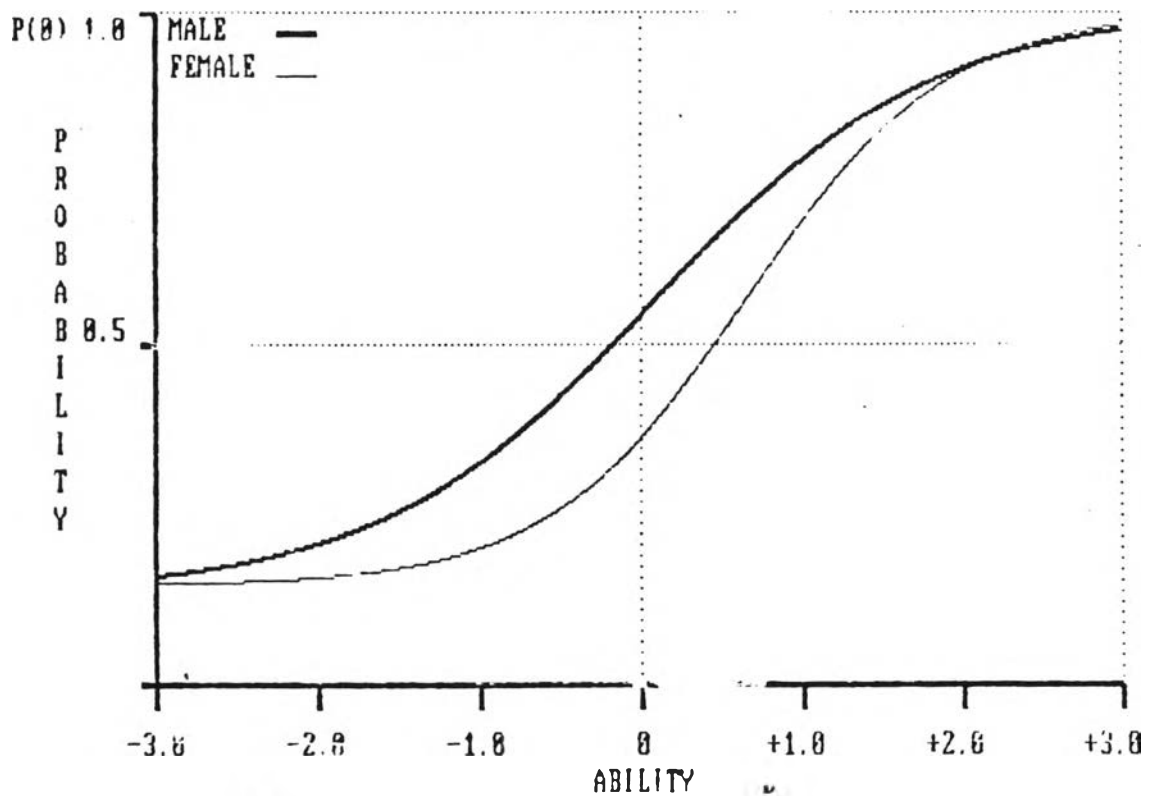


FIGURE 76 PLOT ITEM CHARACTERISTIC CURVE (item 14)



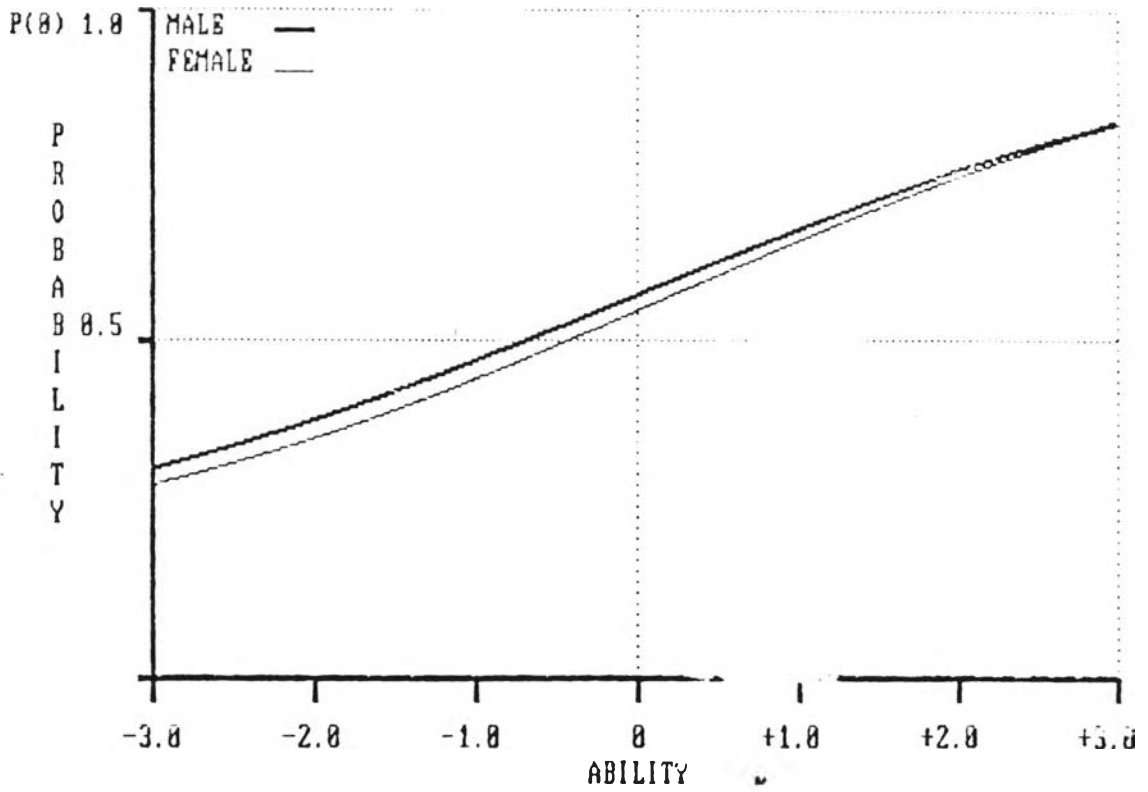


FIGURE 77 PLOT ITEM CHARACTERISTIC CURVE ( $\sigma = 15$ )

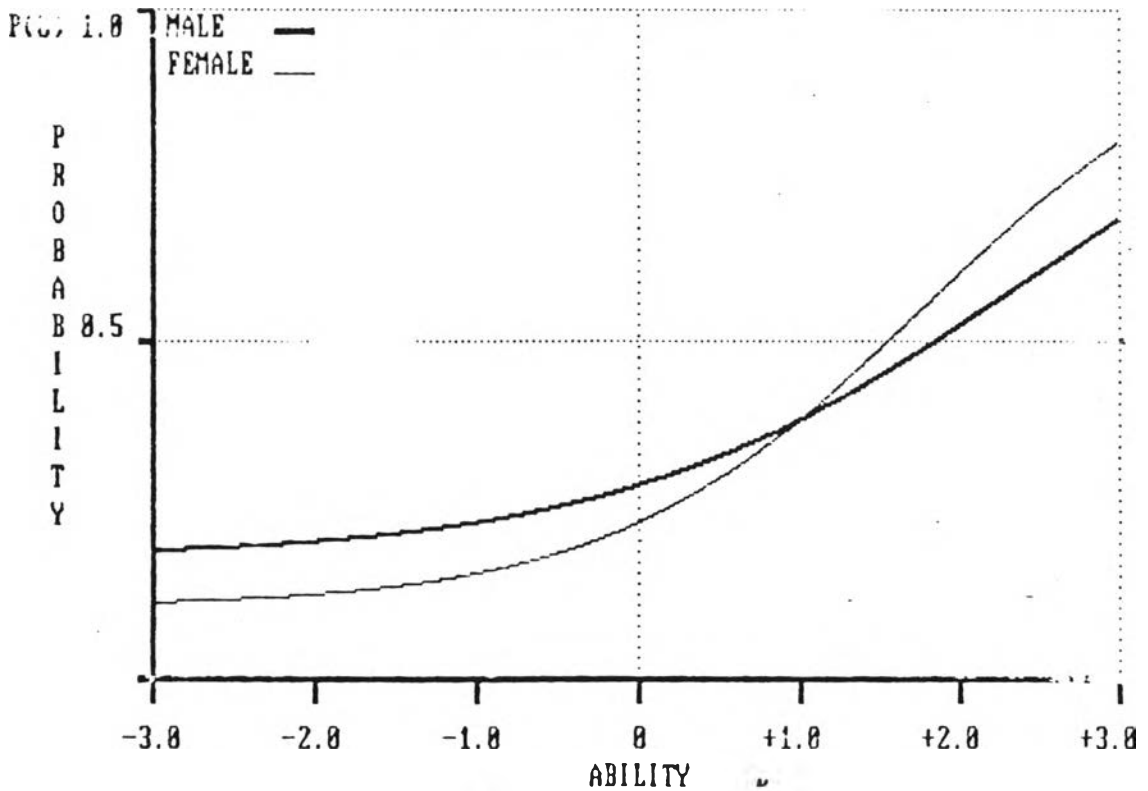


FIGURE 78 PLOT ITEM CHARACTERISTIC CURVE ( $\sigma = 17$ )

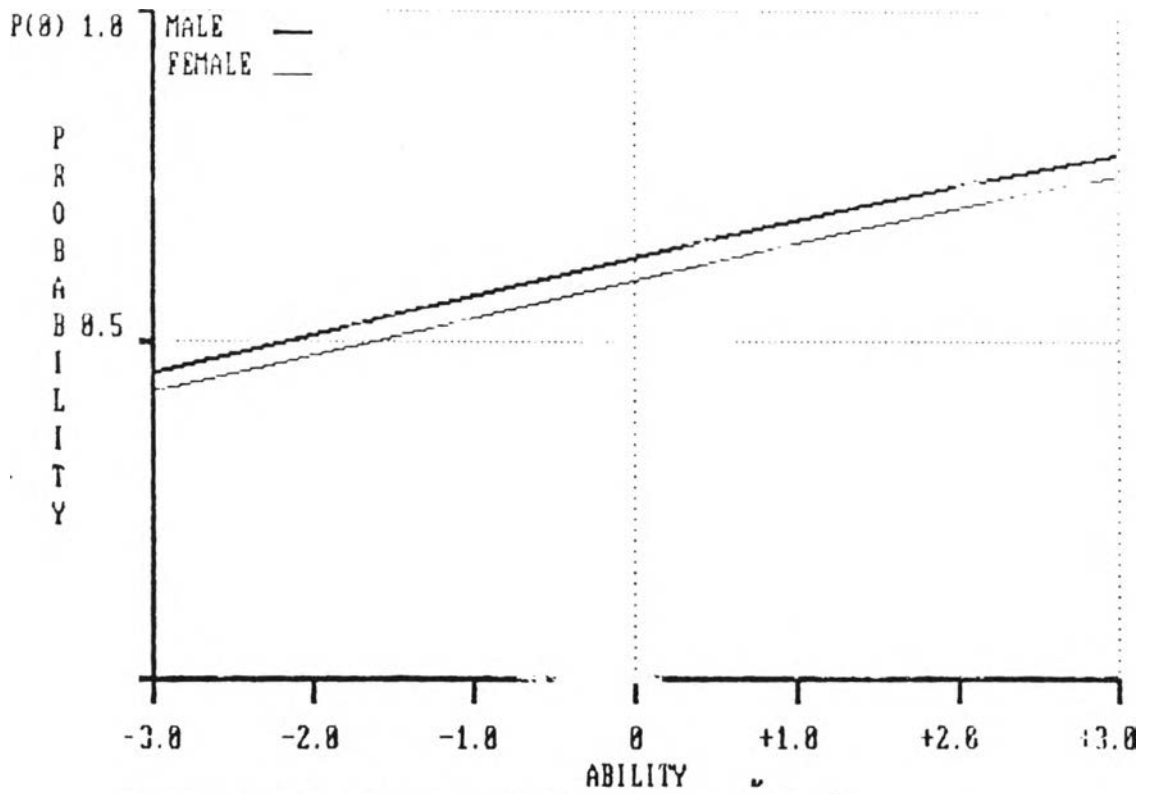


FIGURE 79 PLOT ITEM CHARACTERISTIC CURVE (Item 19)

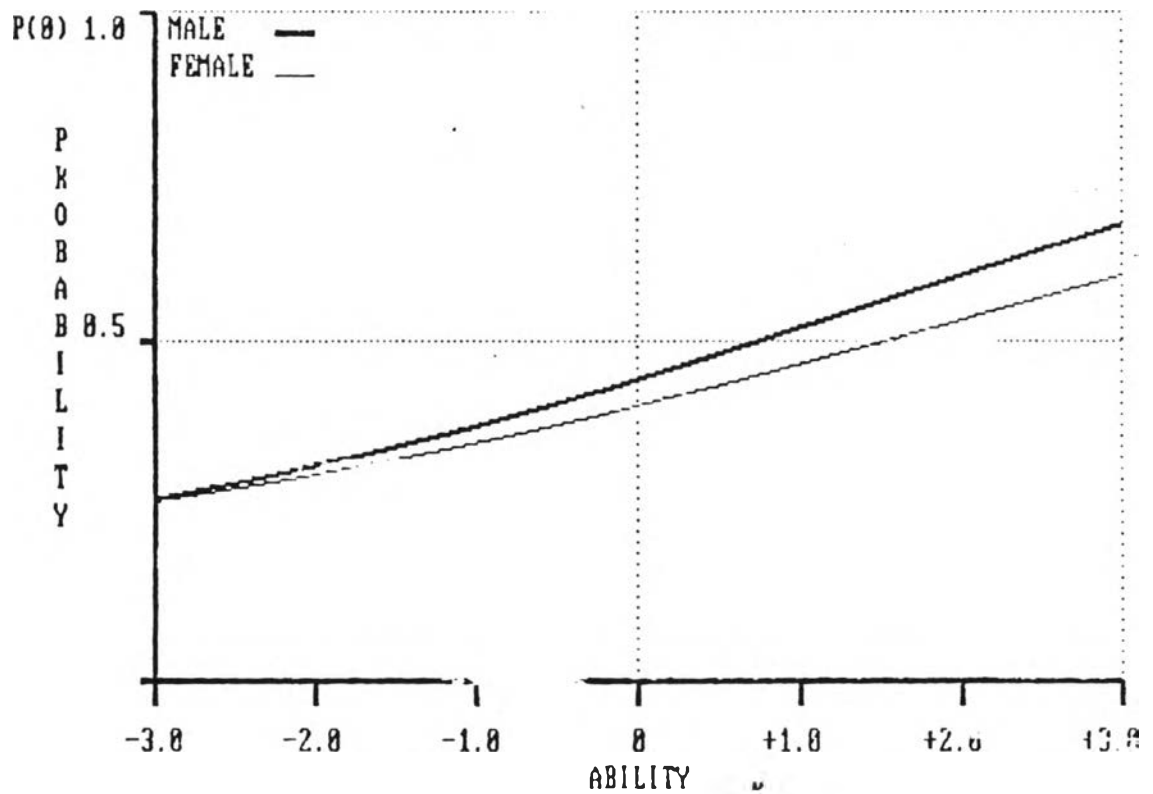


FIGURE 8A PLOT ITEM CHARACTERISTIC CURVE (Item 20)

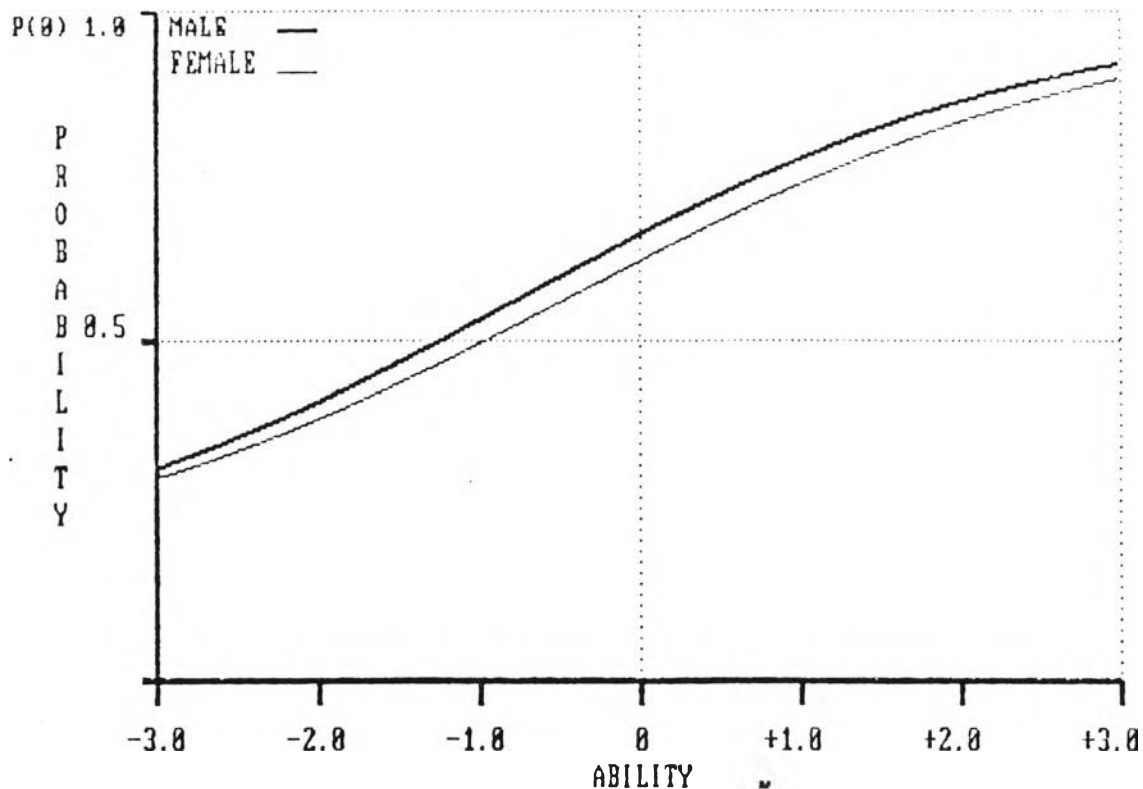


FIGURE 81 PLOT ITEM CHARACTERISTIC CURVE (IIC 21)

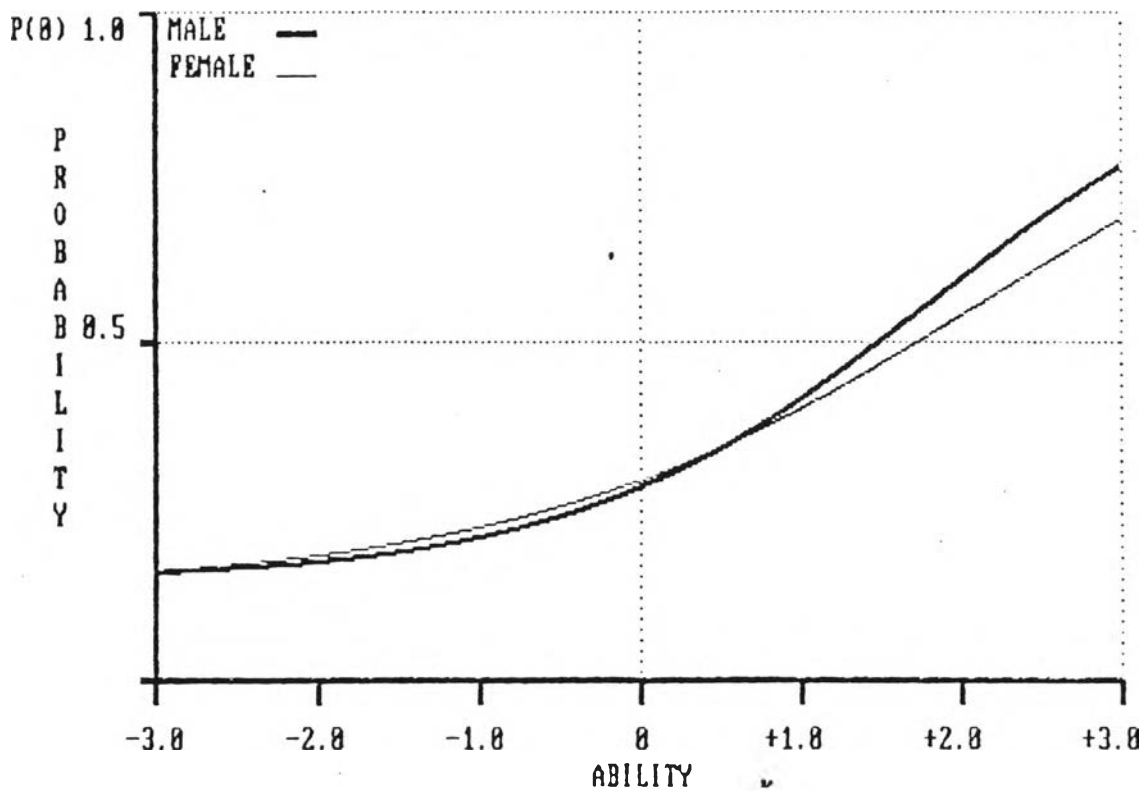


FIGURE 82 PLOT ITEM CHARACTERISTIC CURVE (IIC 22)

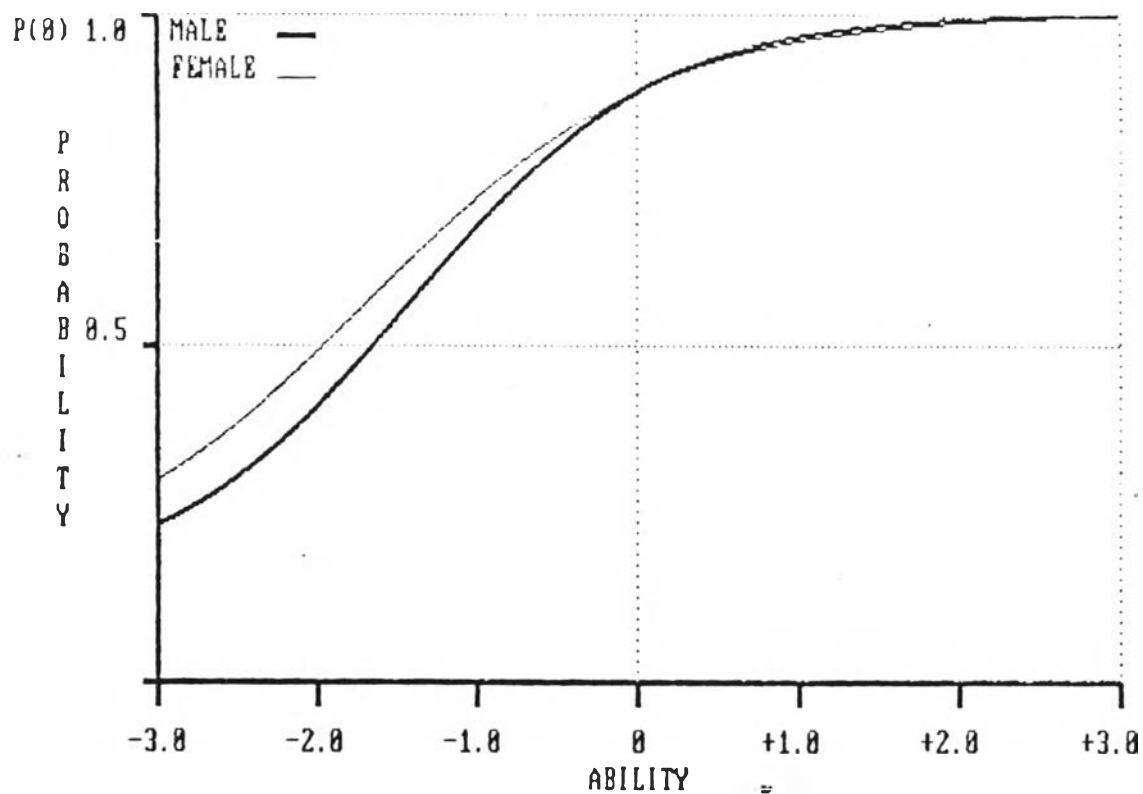


FIGURE 83 PLOT ITEM CHARACTERISTIC CURVE (Item 23)

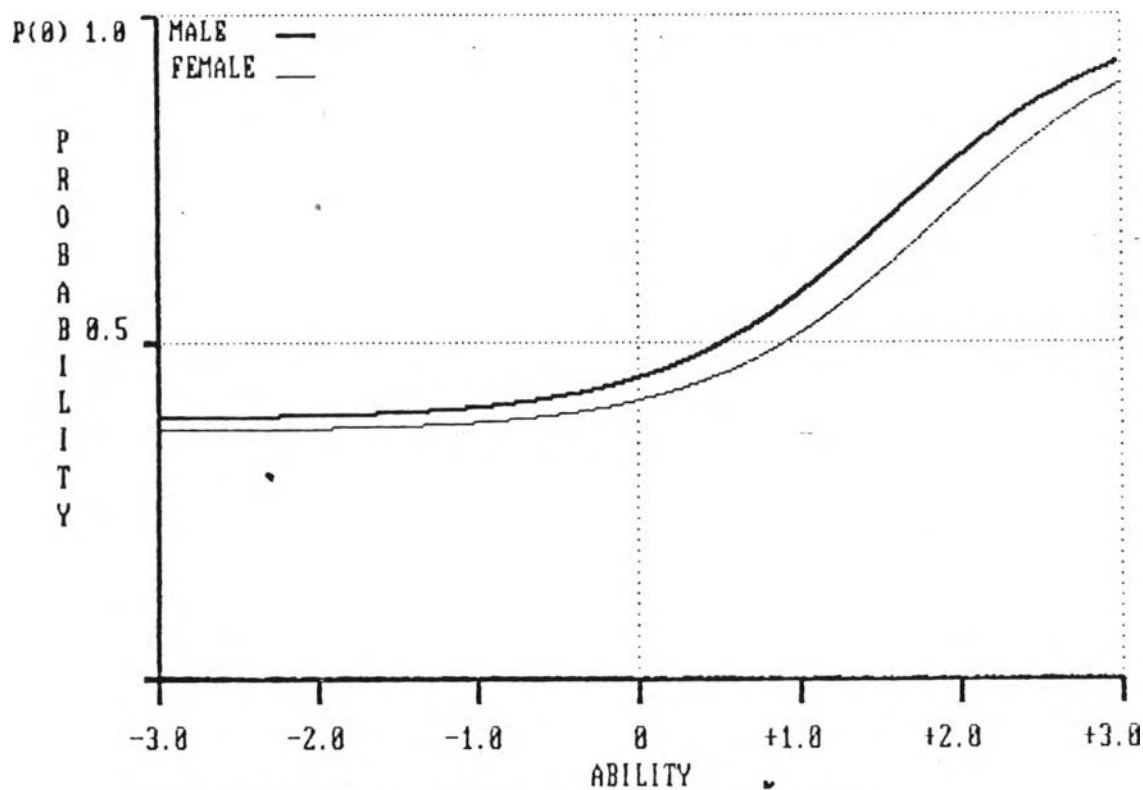


FIGURE 84 PLOT ITEM CHARACTERISTIC CURVE (Item 24)

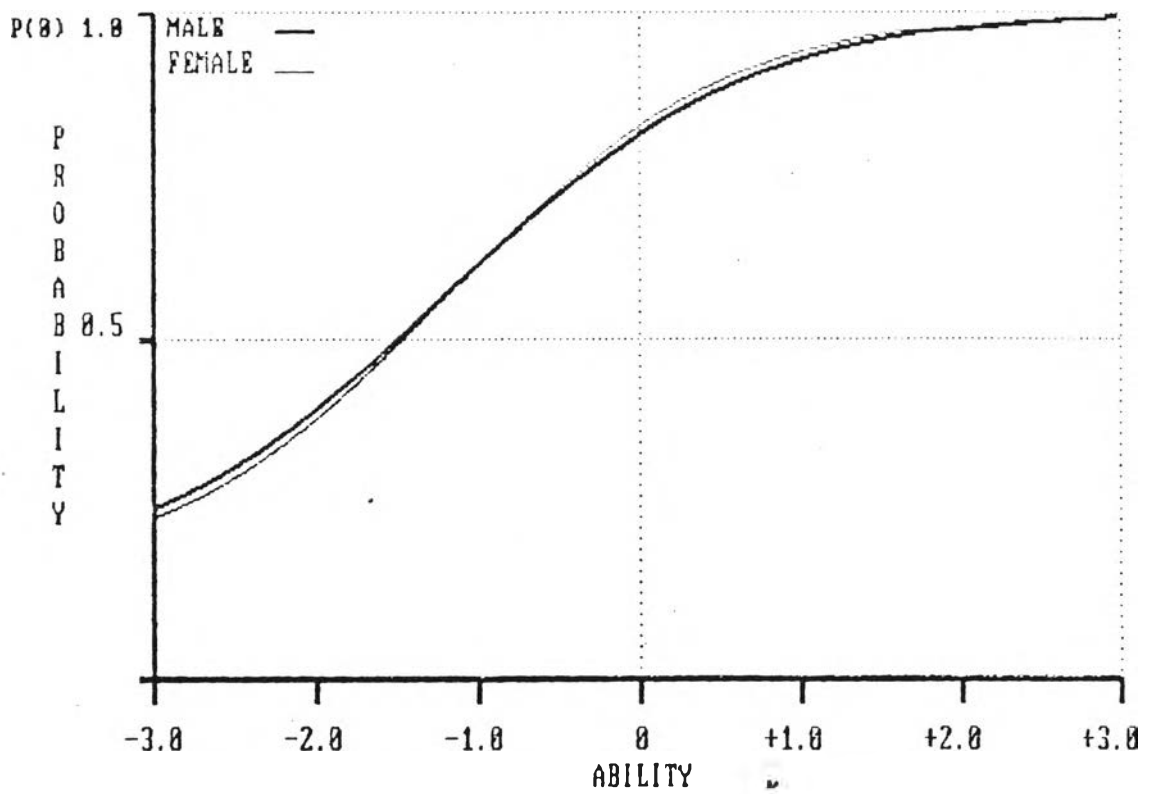


FIGURE 85 PLOT ITEM CHARACTERISTIC CURVE (Item 26)

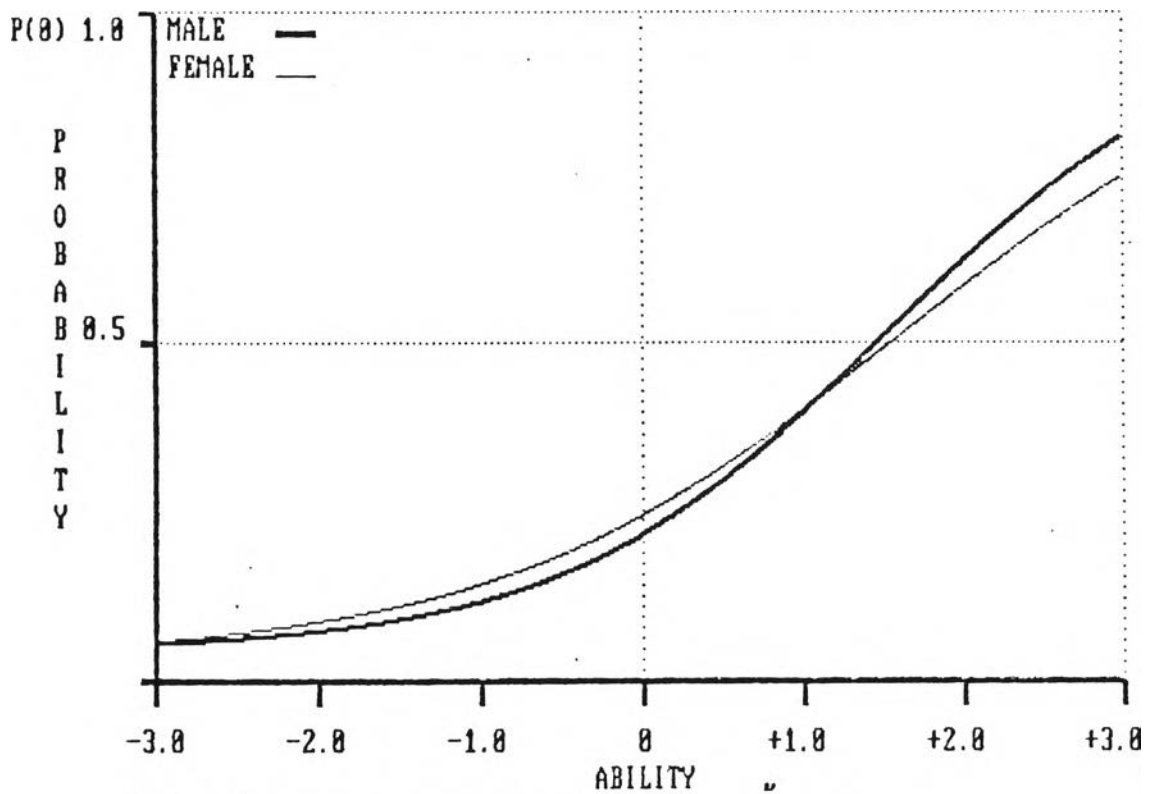


FIGURE 86 PLOT ITEM CHARACTERISTIC CURVE (Item 27)

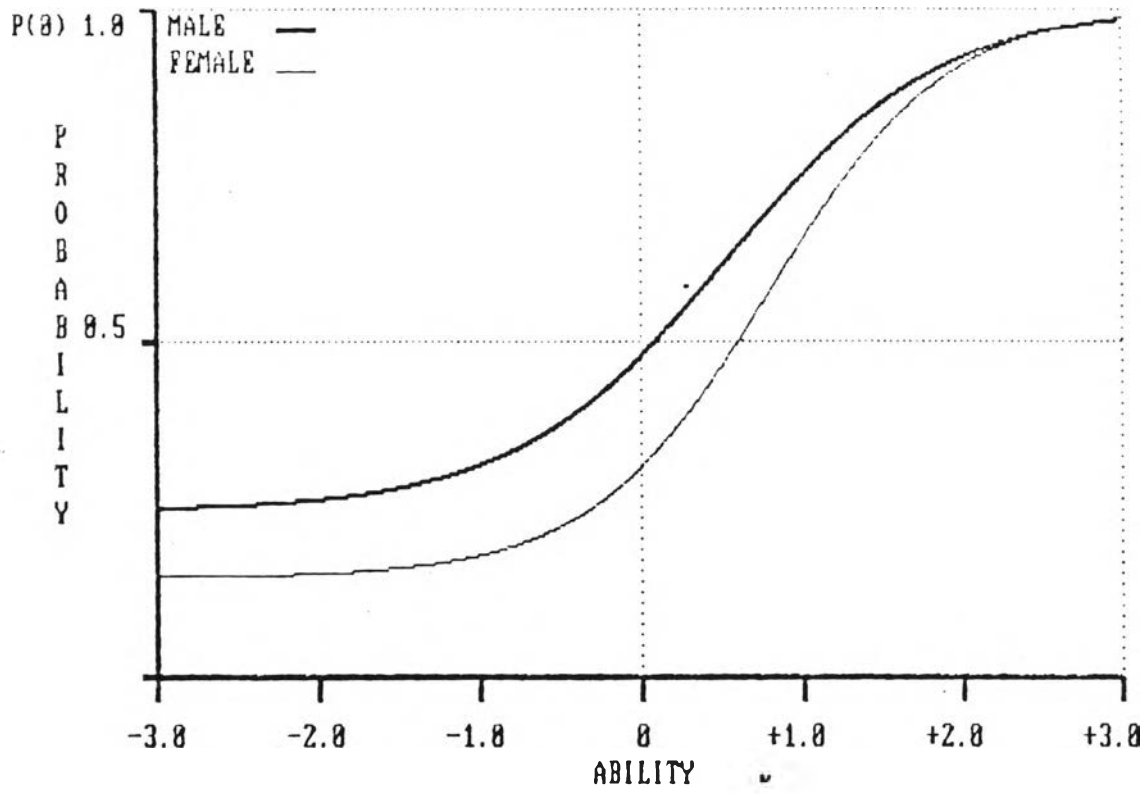


FIGURE 87 PLOT ITEM CHARACTERISTIC CURVE (p 28)

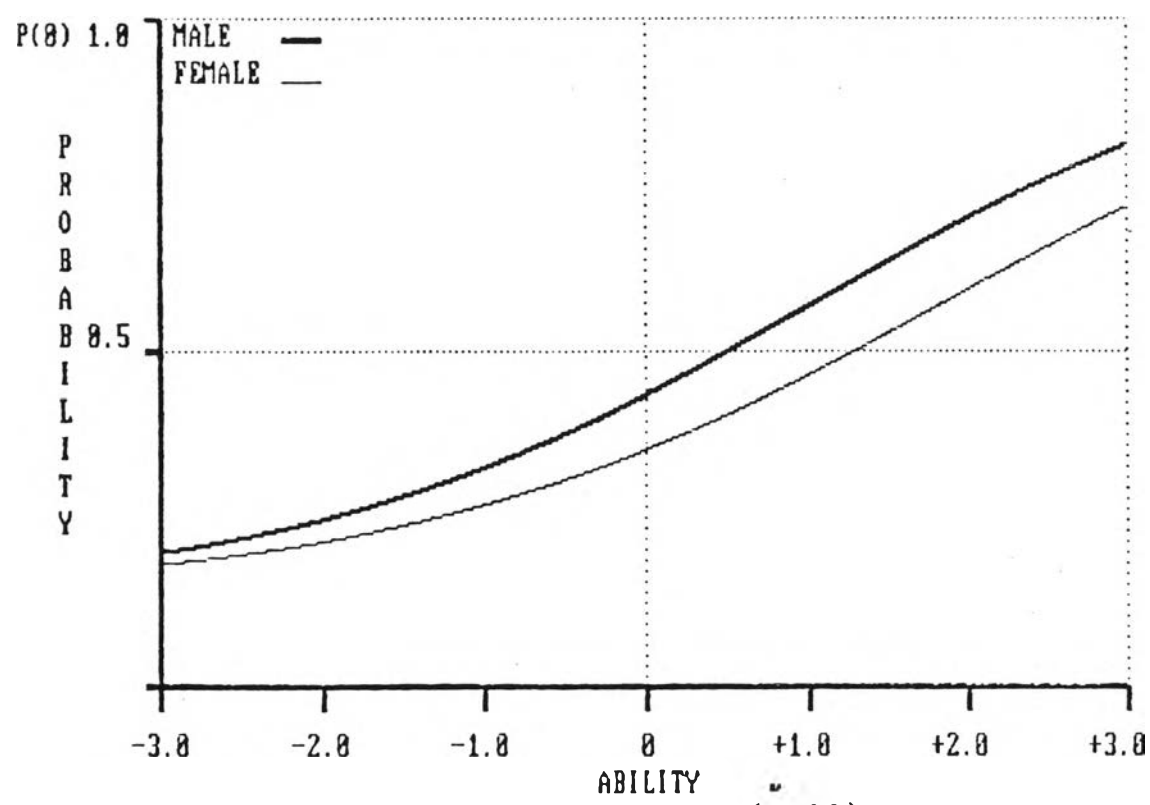


FIGURE 88 PLOT ITEM CHARACTERISTIC CURVE (p 30)

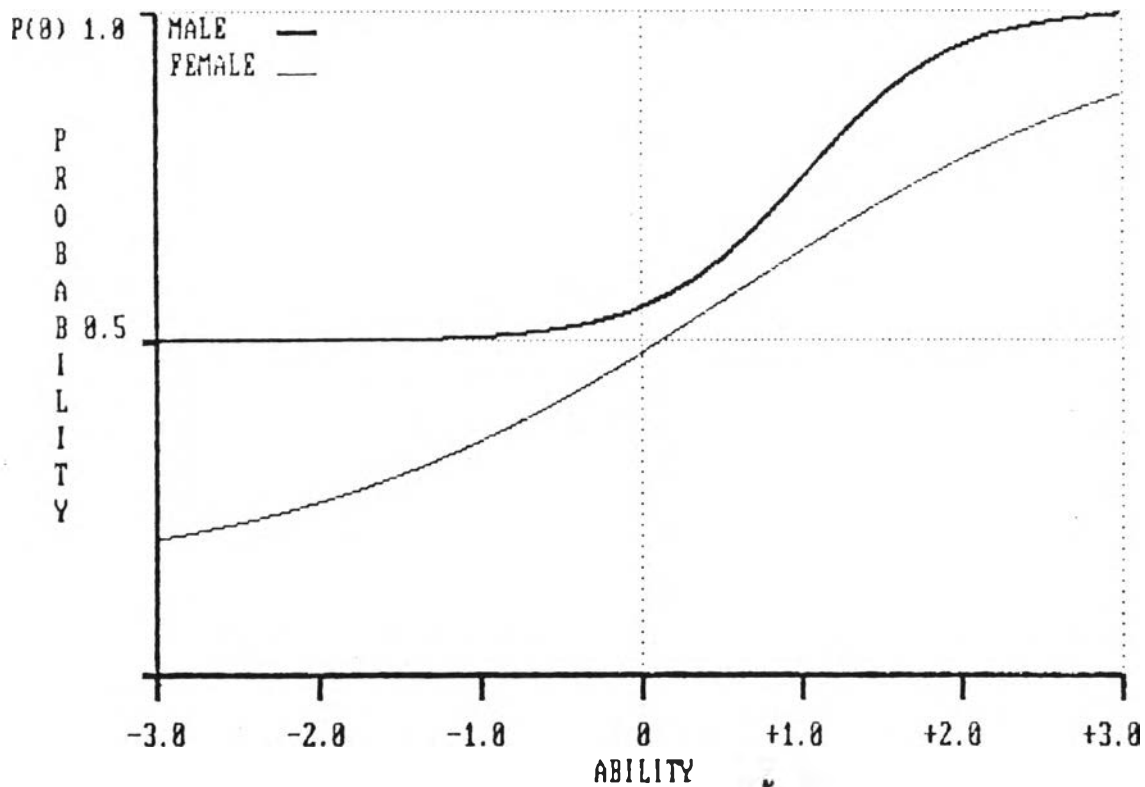


FIGURE 89 PLOT ITEM CHARACTERISTIC CURVE (sigma 31)

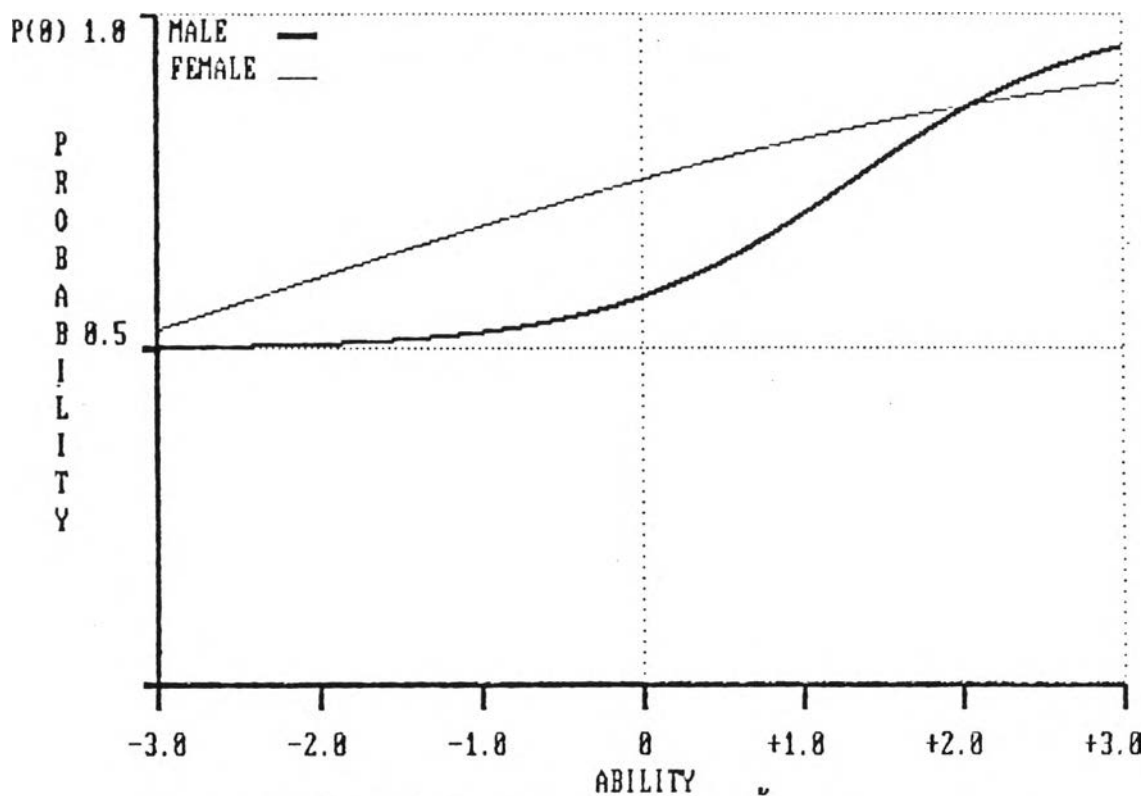


FIGURE 90 PLOT ITEM CHARACTERISTIC CURVE (sigma 33)

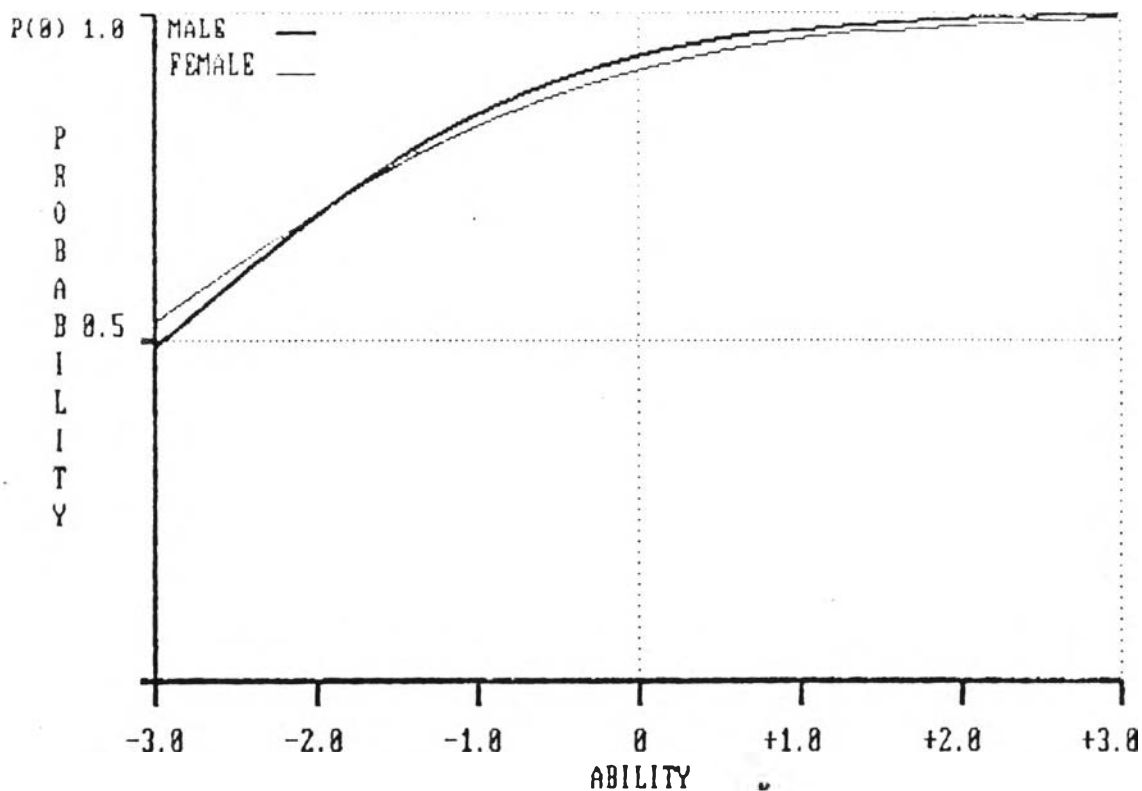


FIGURE 91 PLOT ITEM CHARACTERISTIC CURVE (item 34)

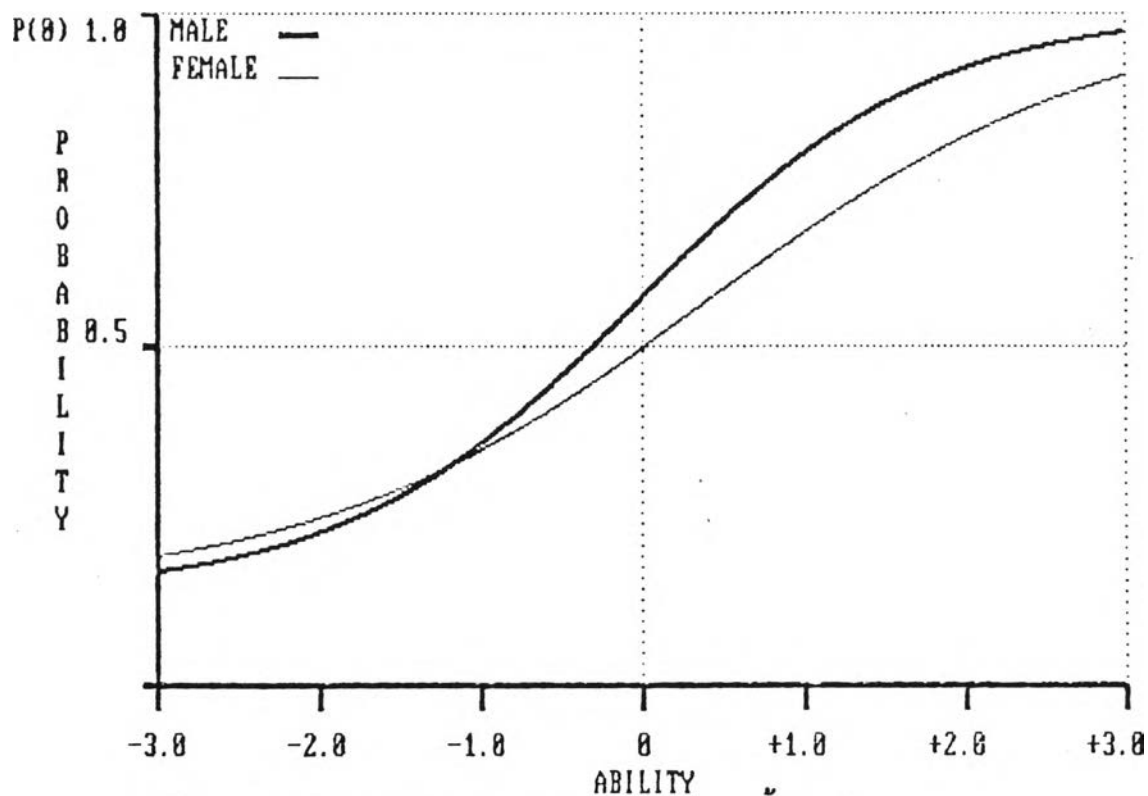


FIGURE 92 PLOT ITEM CHARACTERISTIC CURVE (item 36)



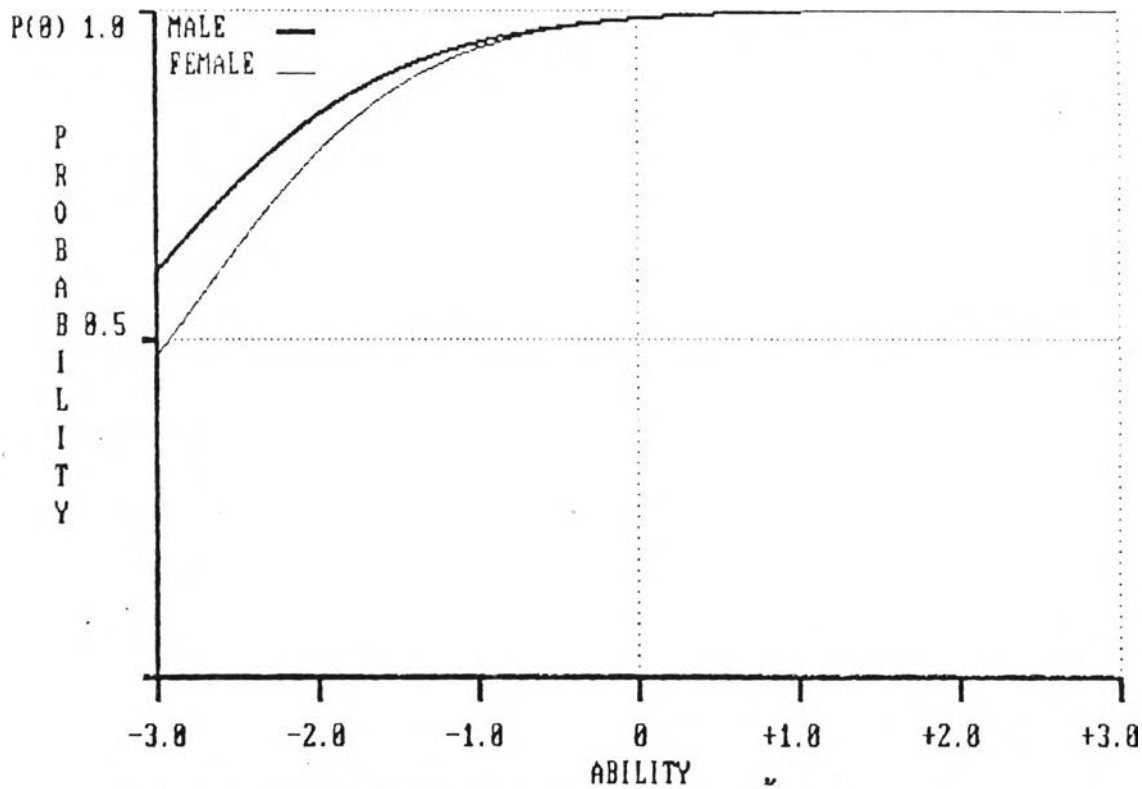


FIGURE 93 PLOT ITEM CHARACTERISTIC CURVE (no 37)

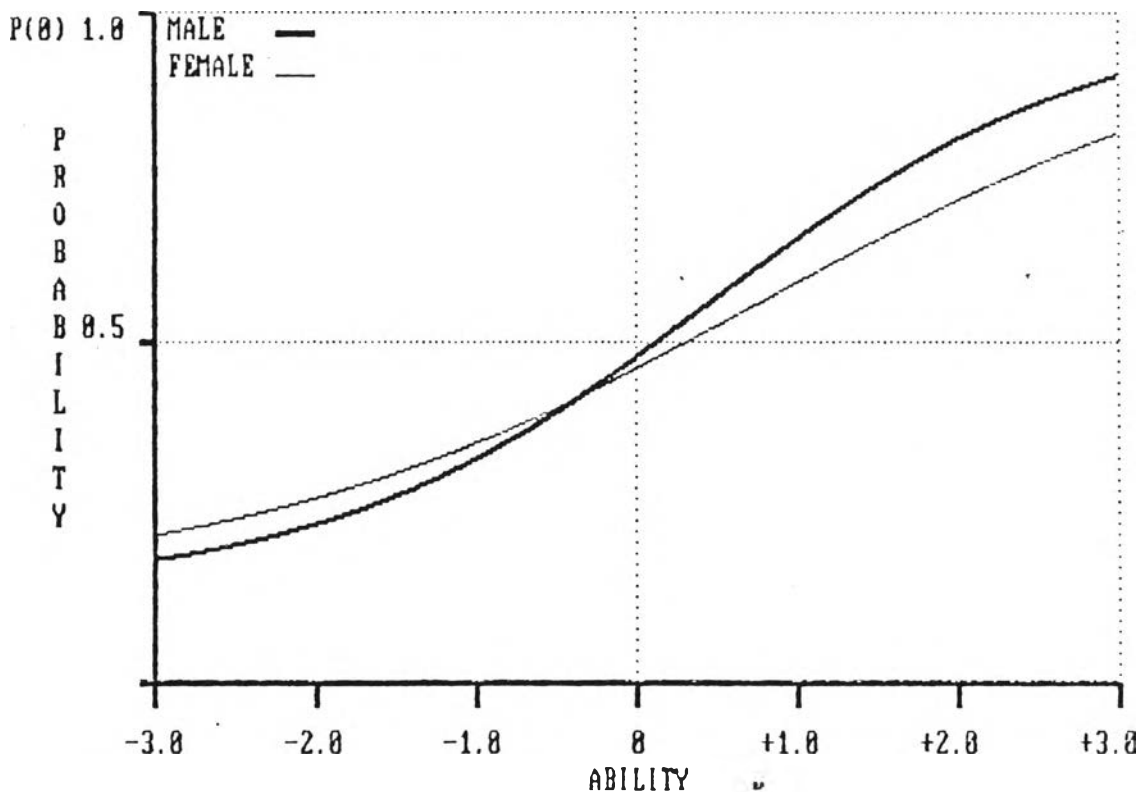


FIGURE 94 PLOT ITEM CHARACTERISTIC CURVE (no 38)

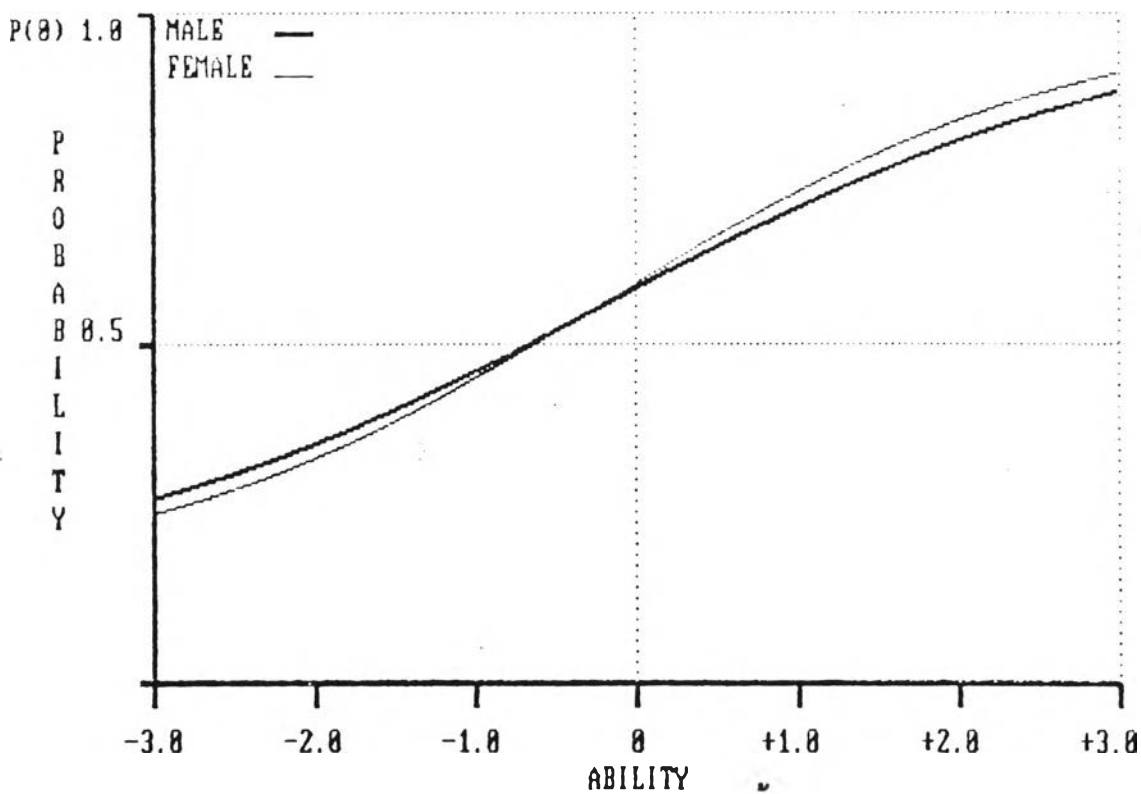


FIGURE 95 PLOT ITEM CHARACTERISTIC CURVE (item 39)

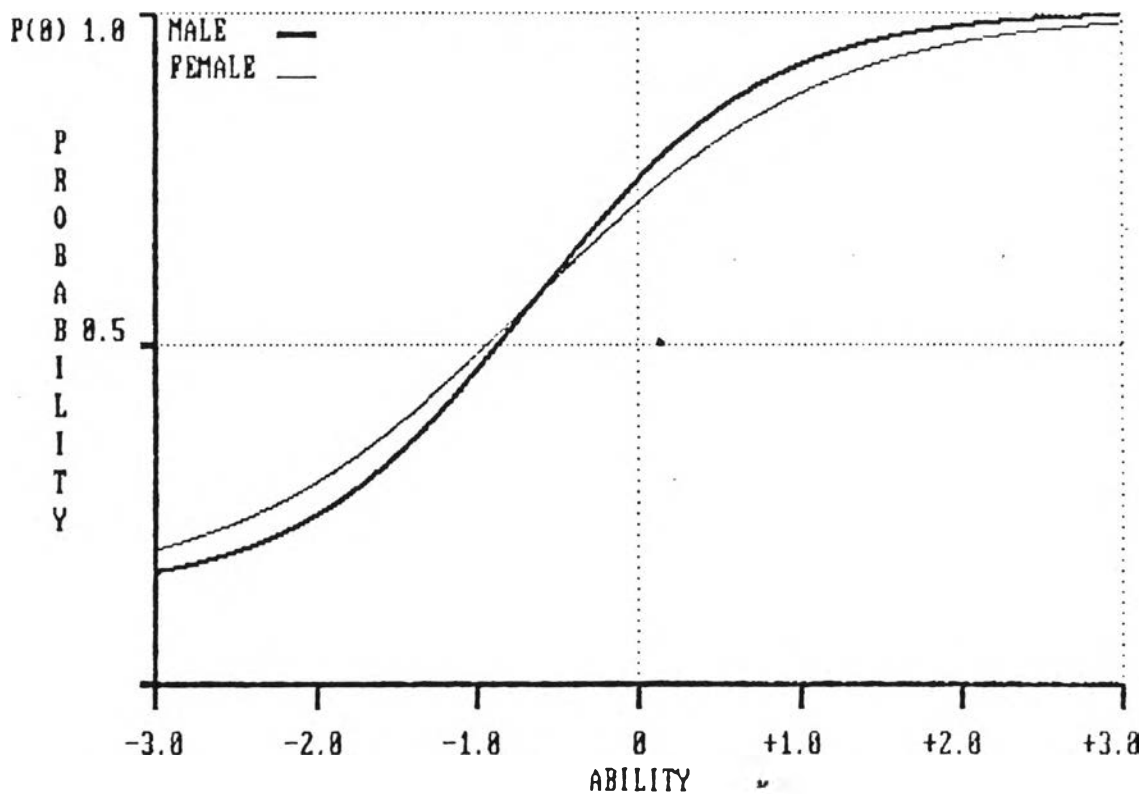
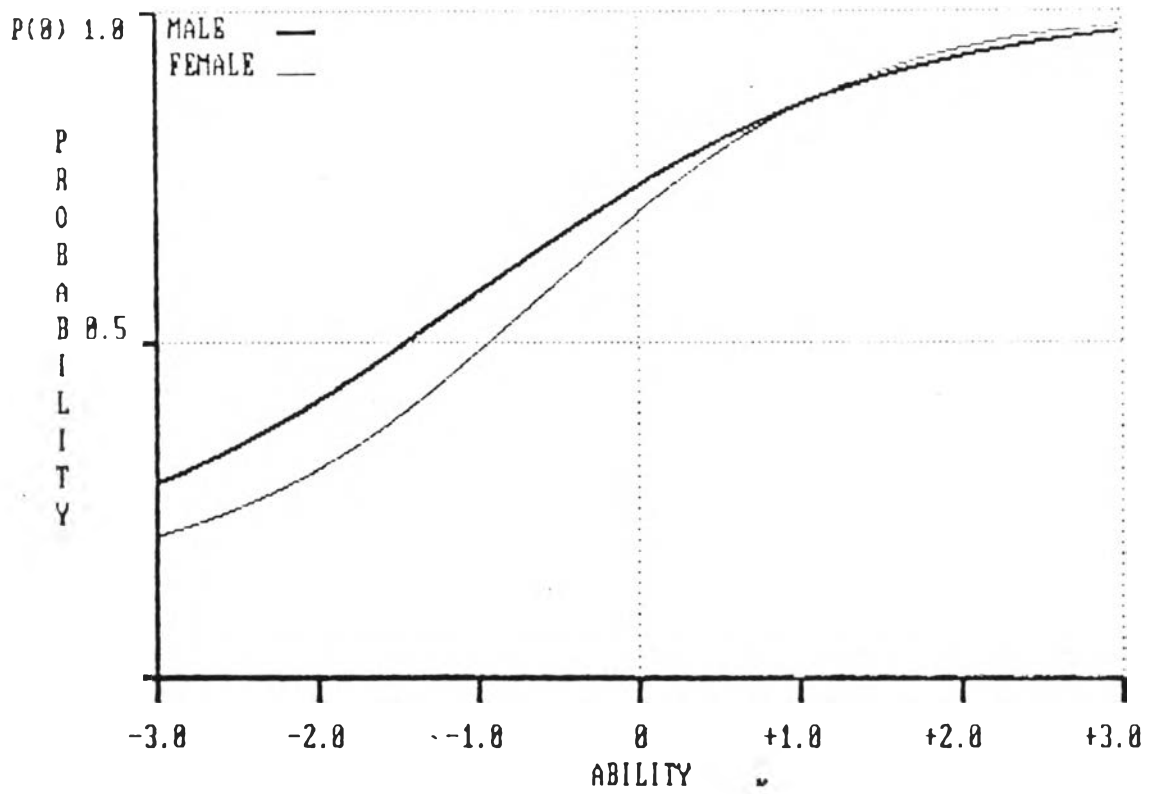
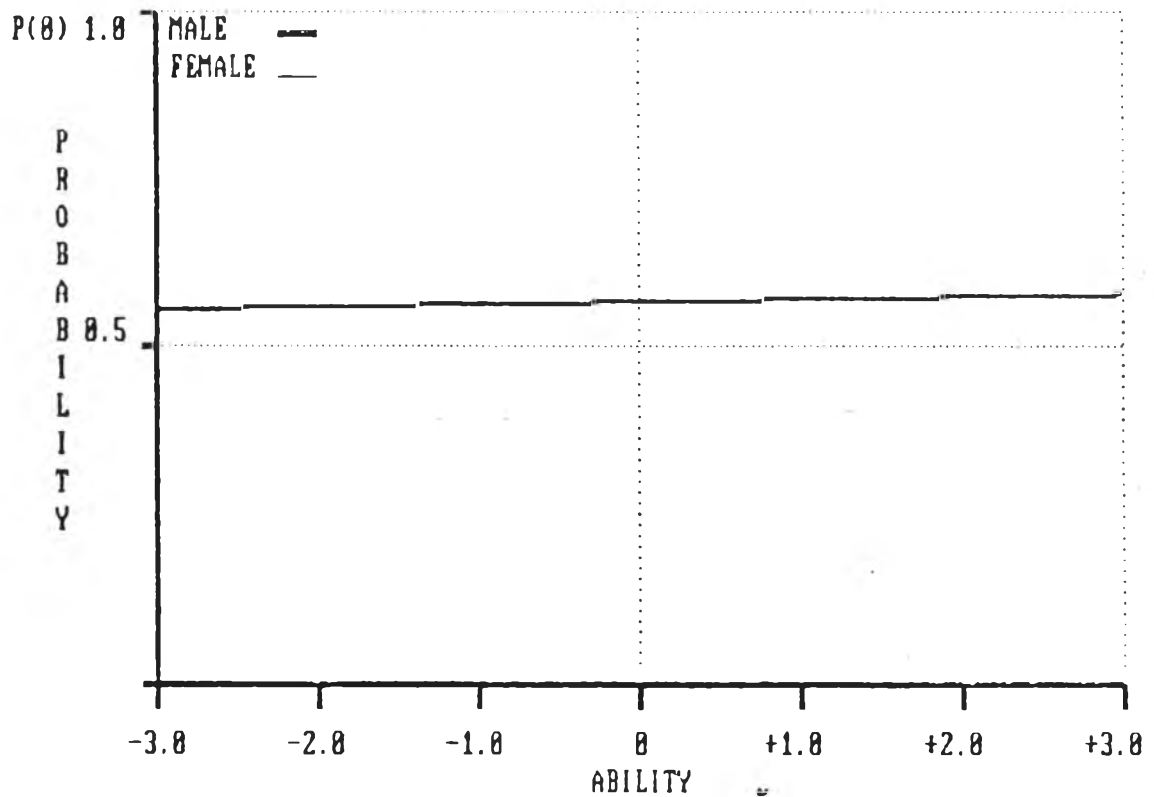


FIGURE 96 PLOT ITEM CHARACTERISTIC CURVE (item 40)

FIGURE 97 PLOT ITEM CHARACTERISTIC CURVE ( $\sigma$  41)FIGURE 98 PLOT ITEM CHARACTERISTIC CURVE ( $\sigma$  42)

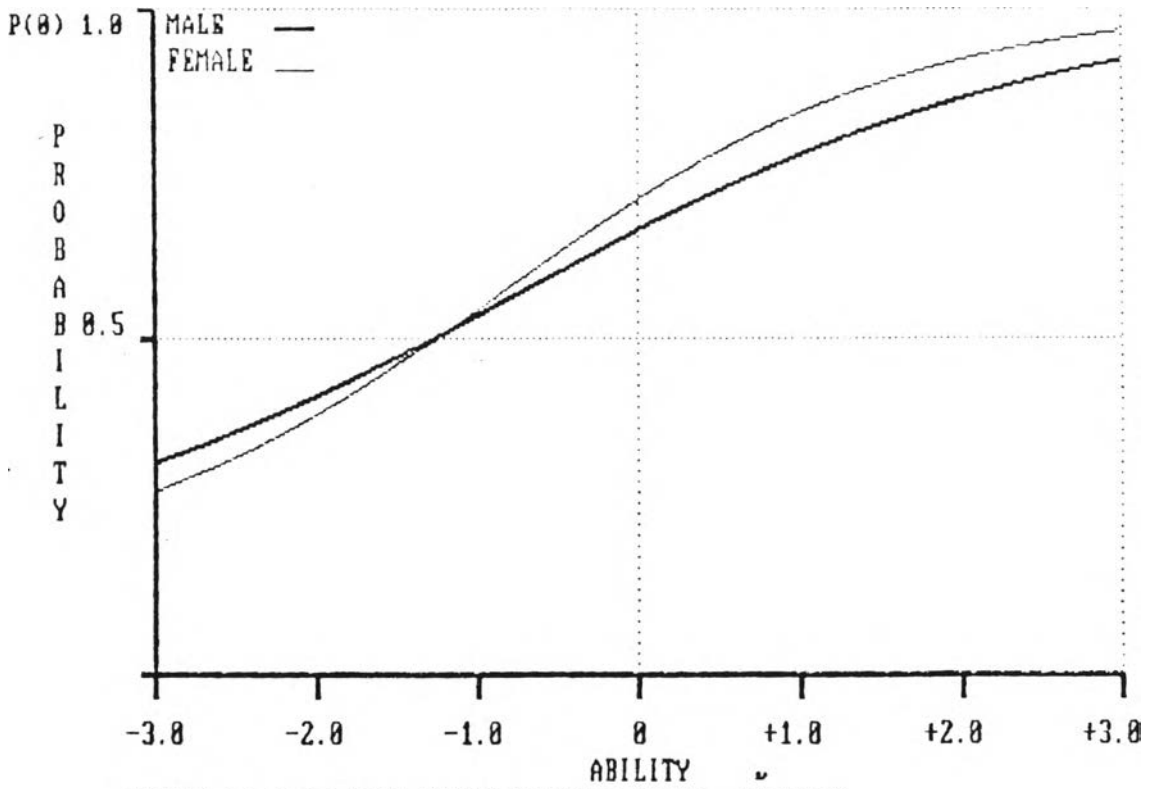


FIGURE 99 PLOT ITEM CHARACTERISTIC CURVE (no 43)

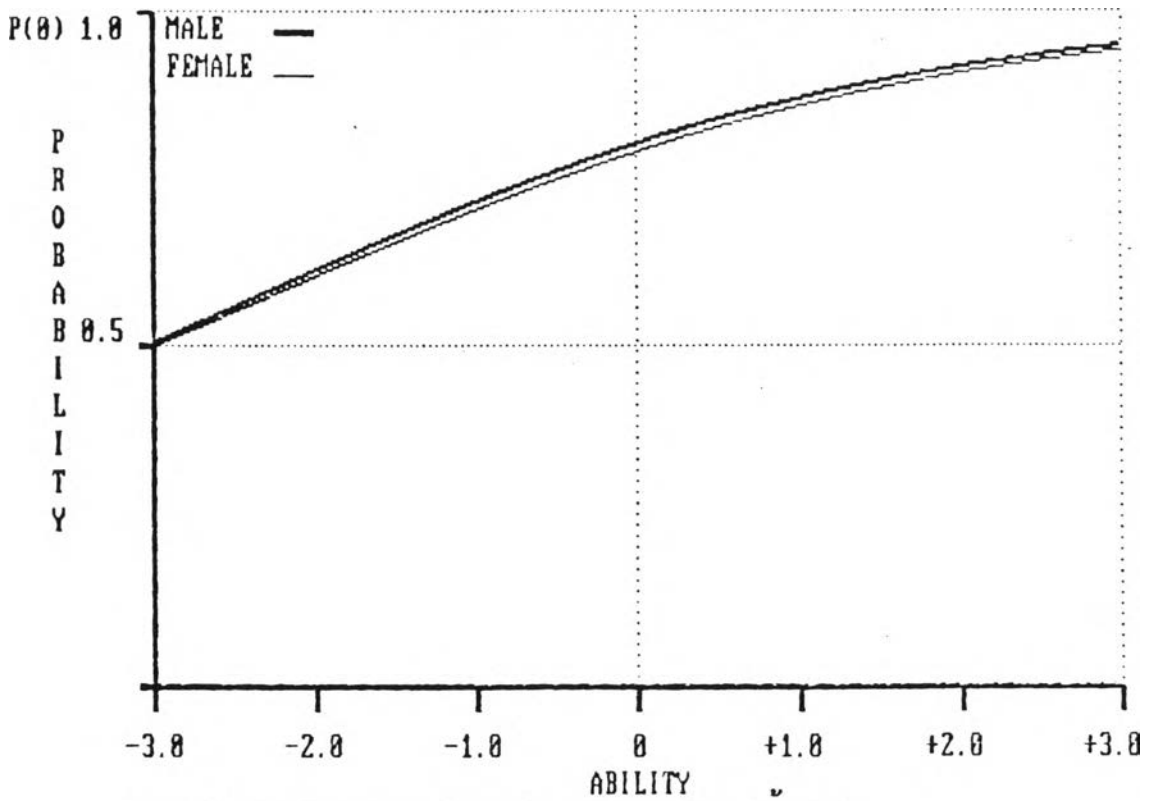


FIGURE 100 PLOT ITEM CHARACTERISTIC CURVE (no 44)

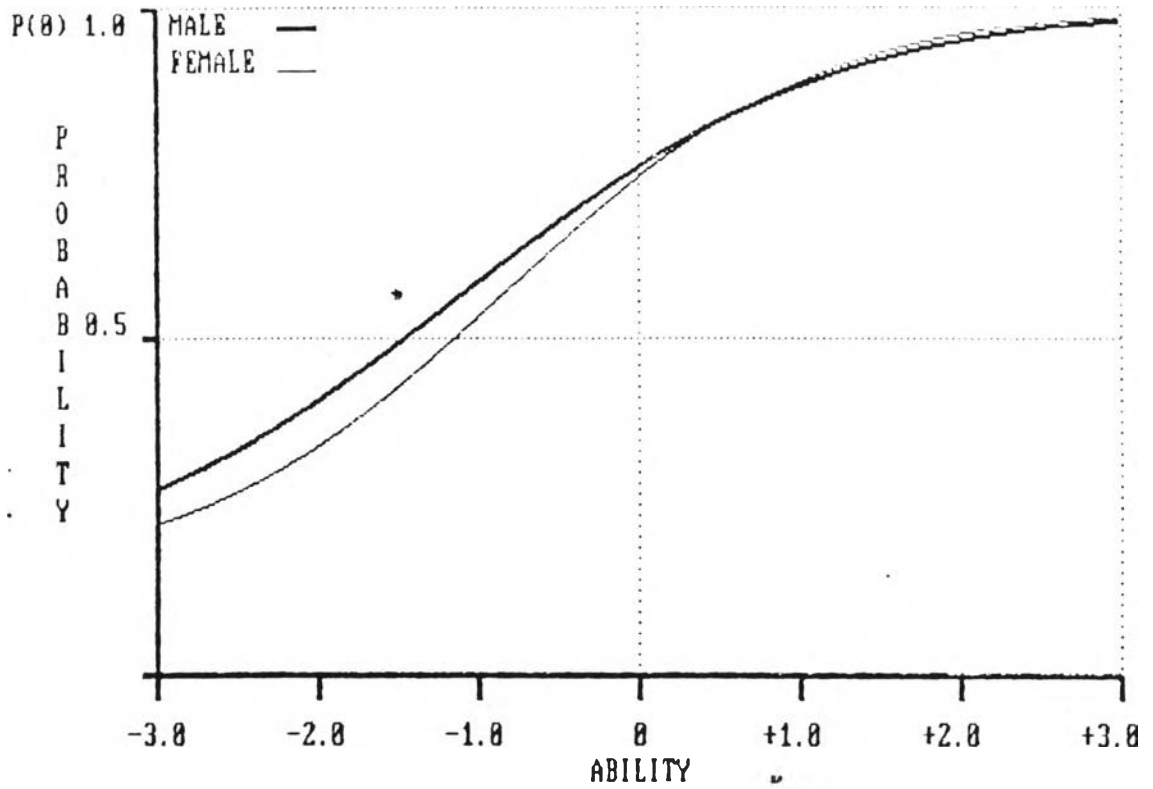


FIGURE 101 PLOT ITEM CHARACTERISTIC CURVE (ID 45)

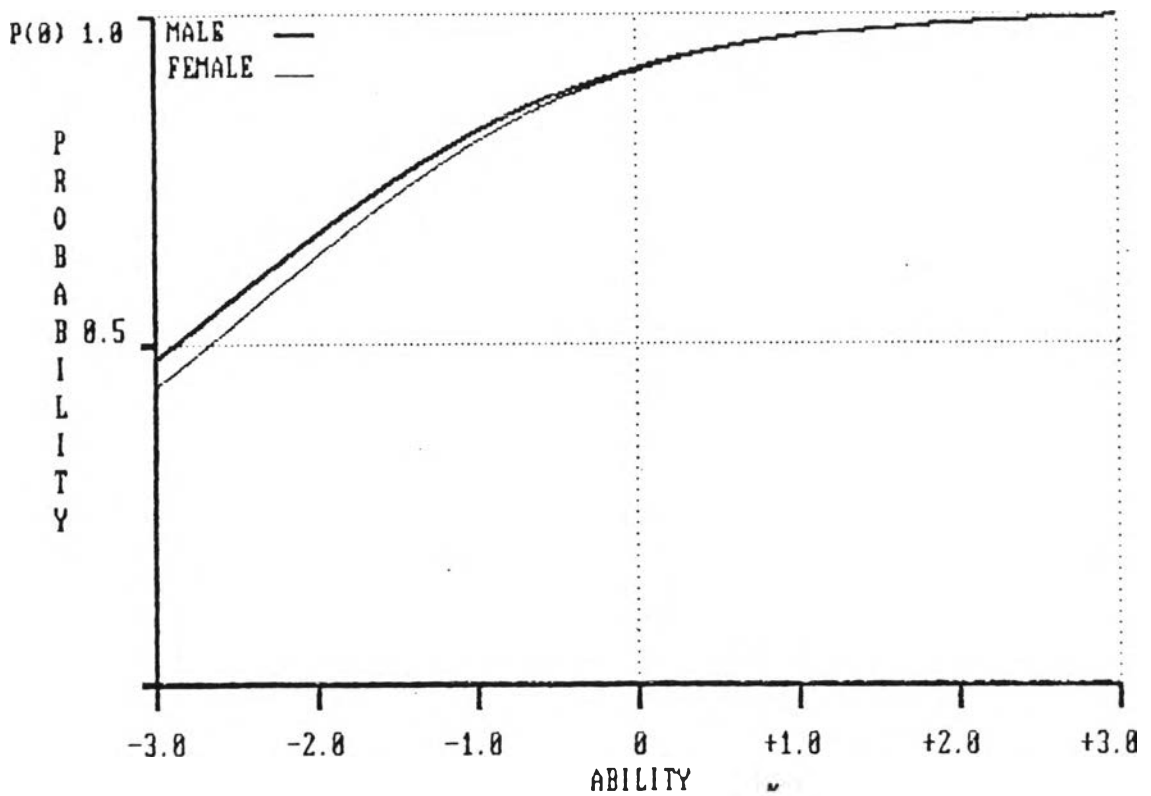


FIGURE 102 PLOT ITEM CHARACTERISTIC CURVE (ID 46)

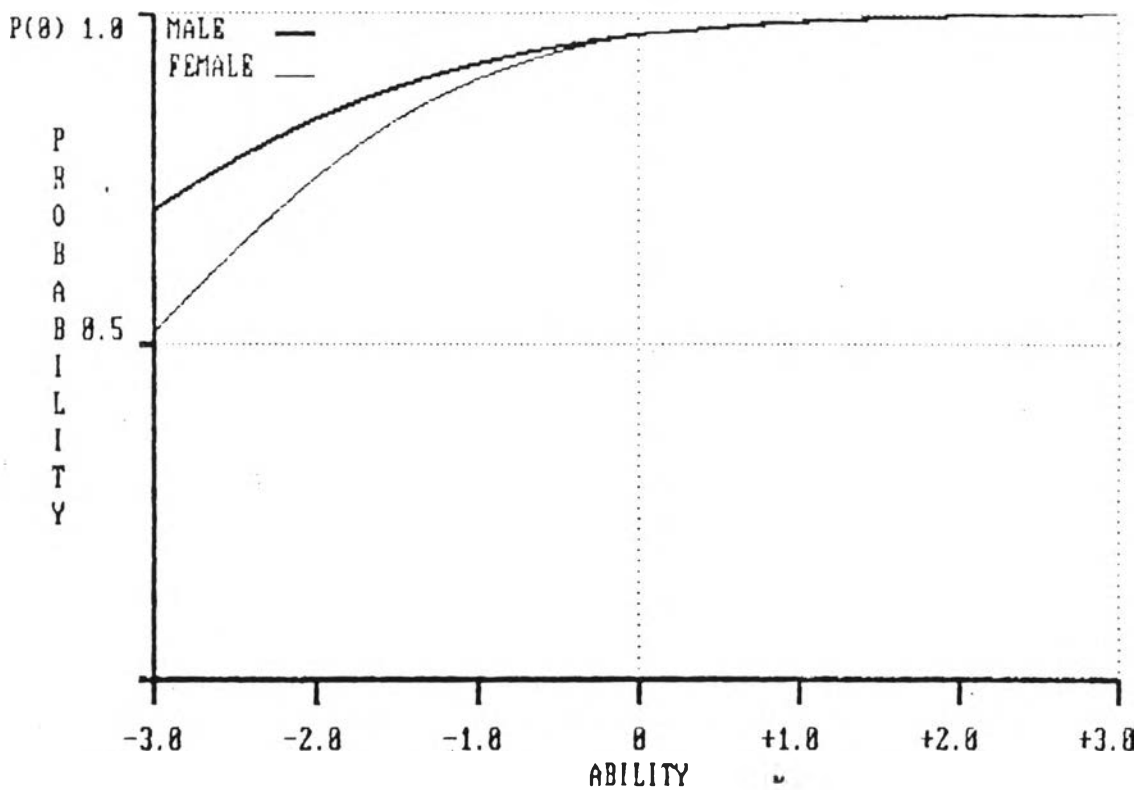


FIGURE 103 PLOT ITEM CHARACTERISTIC CURVE (ID 47)

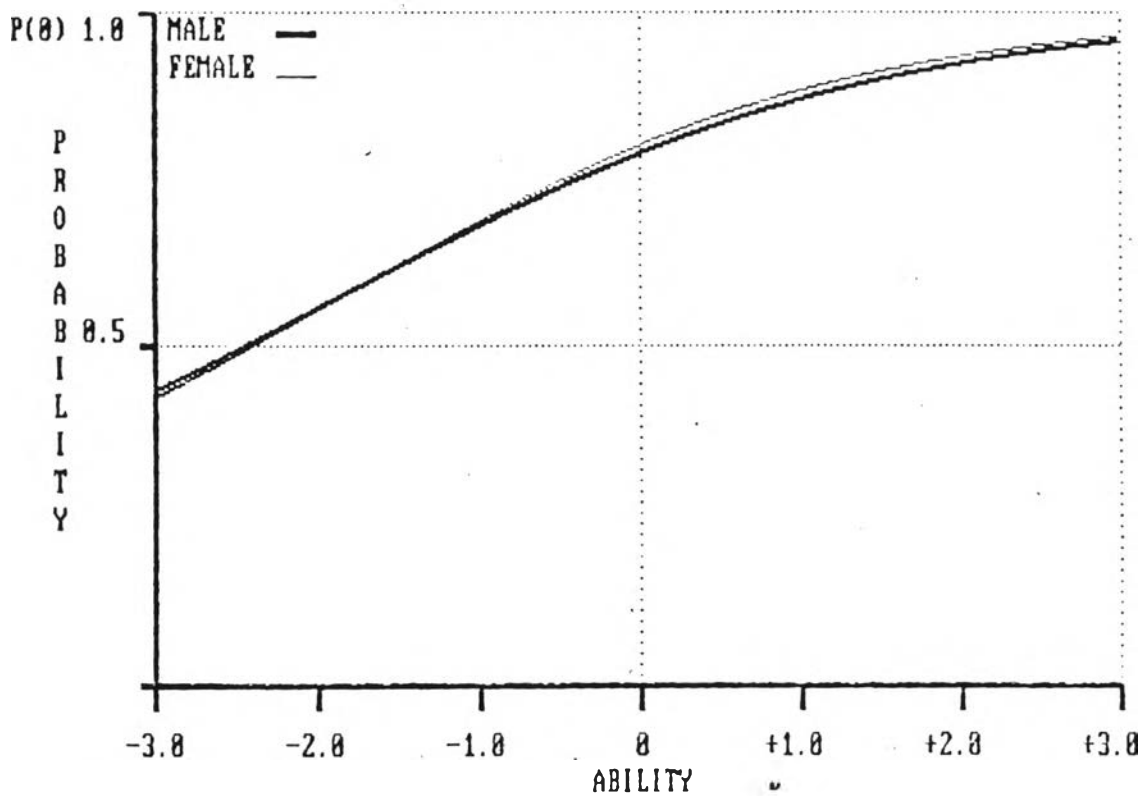


FIGURE 104 PLOT ITEM CHARACTERISTIC CURVE (ID 48)

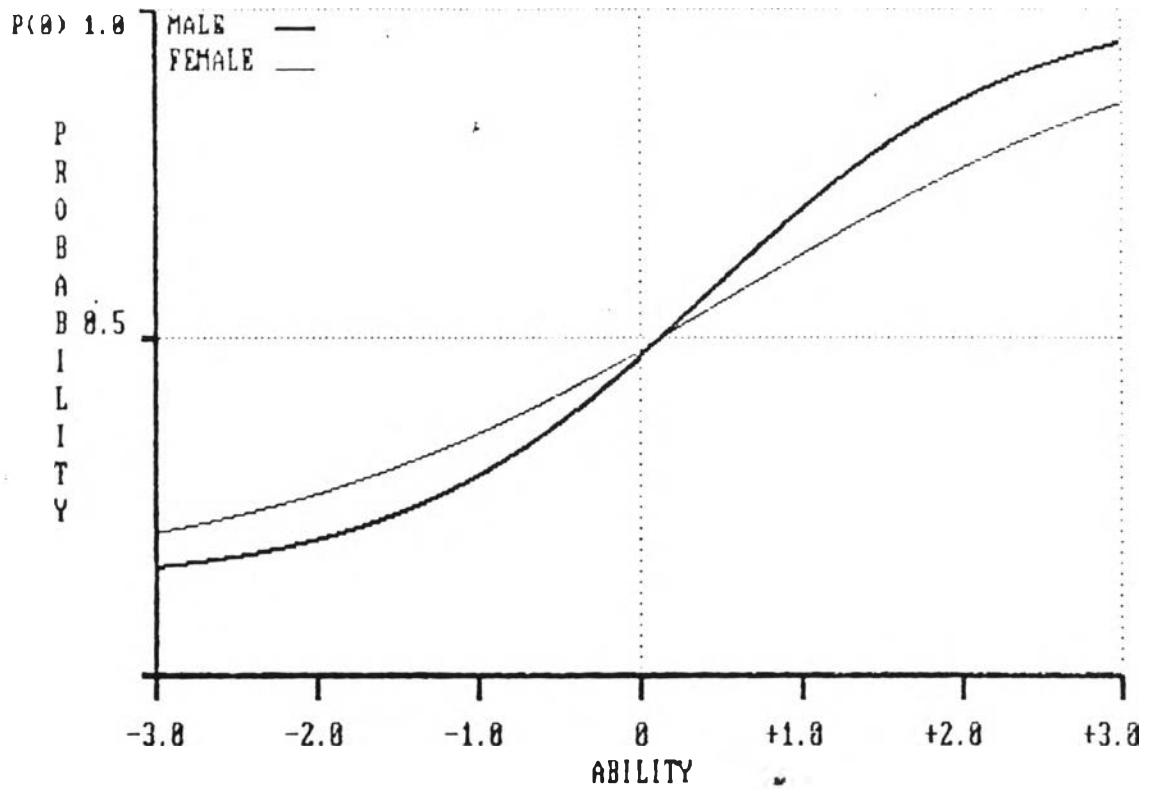


FIGURE 185 PLOT ITEM CHARACTERISTIC CURVE (Item 50)

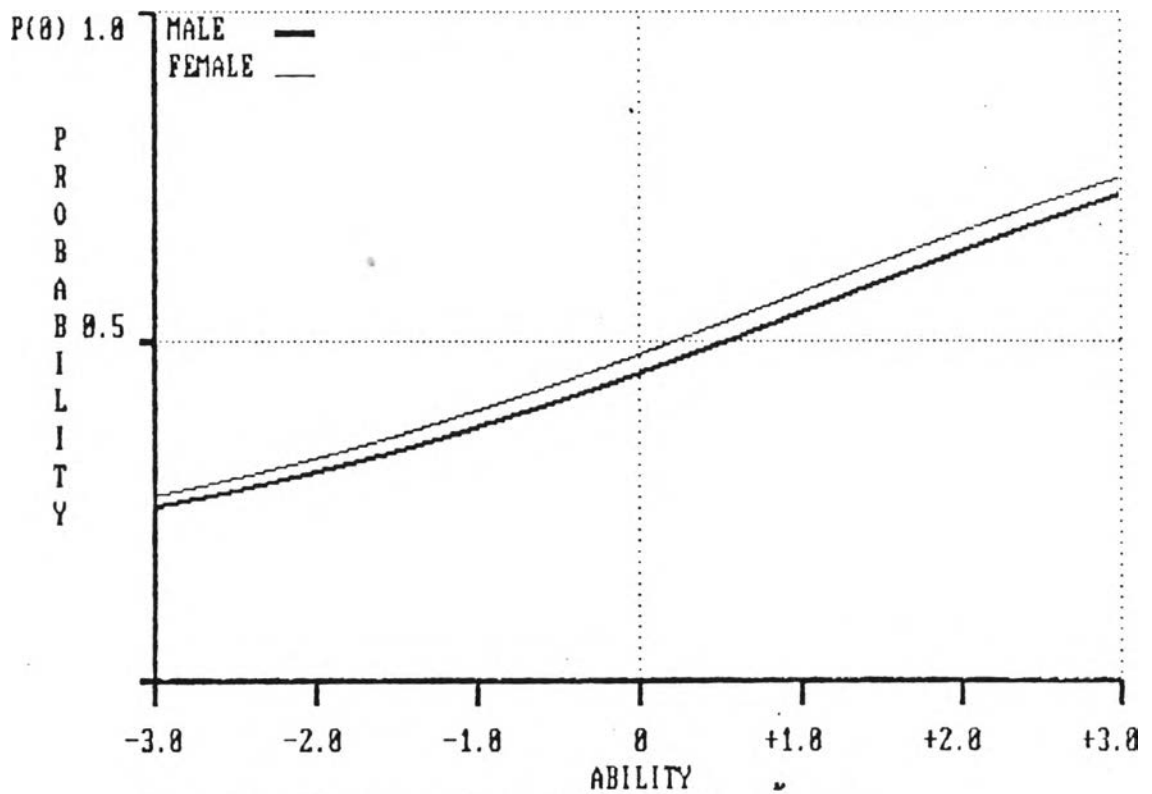


FIGURE 186 PLOT ITEM CHARACTERISTIC CURVE (Item 51)

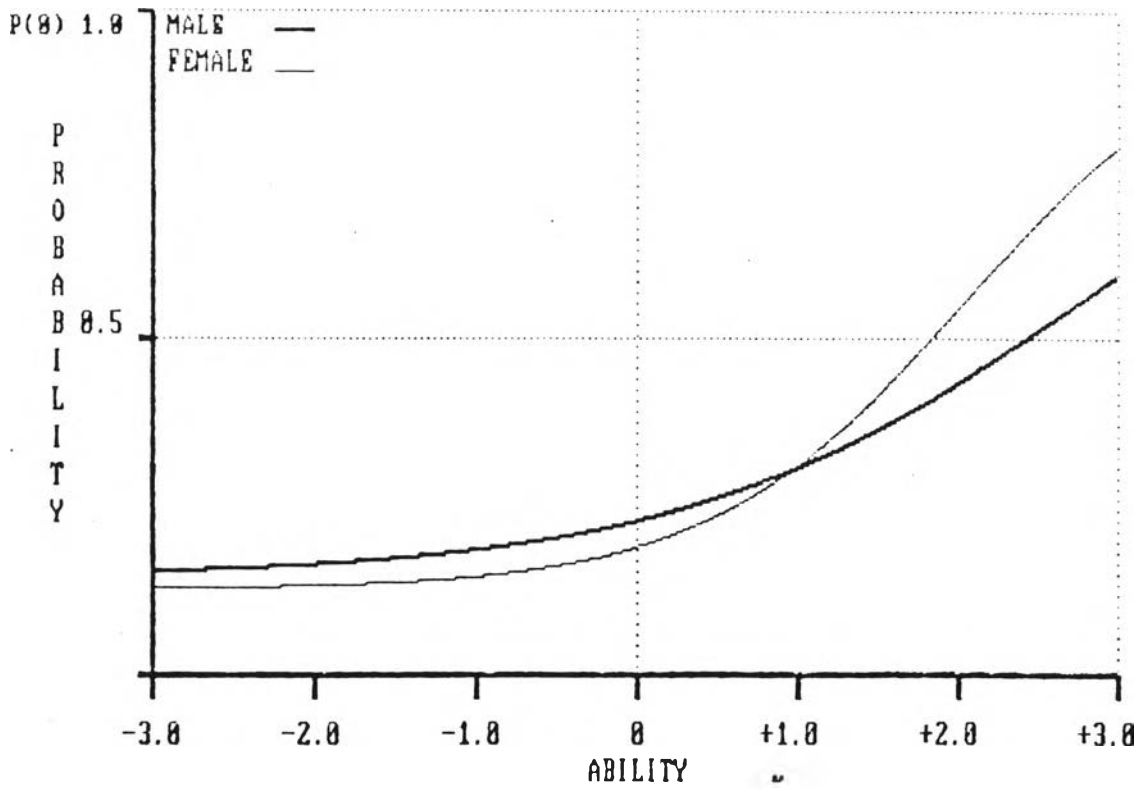


FIGURE 187 PLOT ITEM CHARACTERISTIC CURVE (no 58)

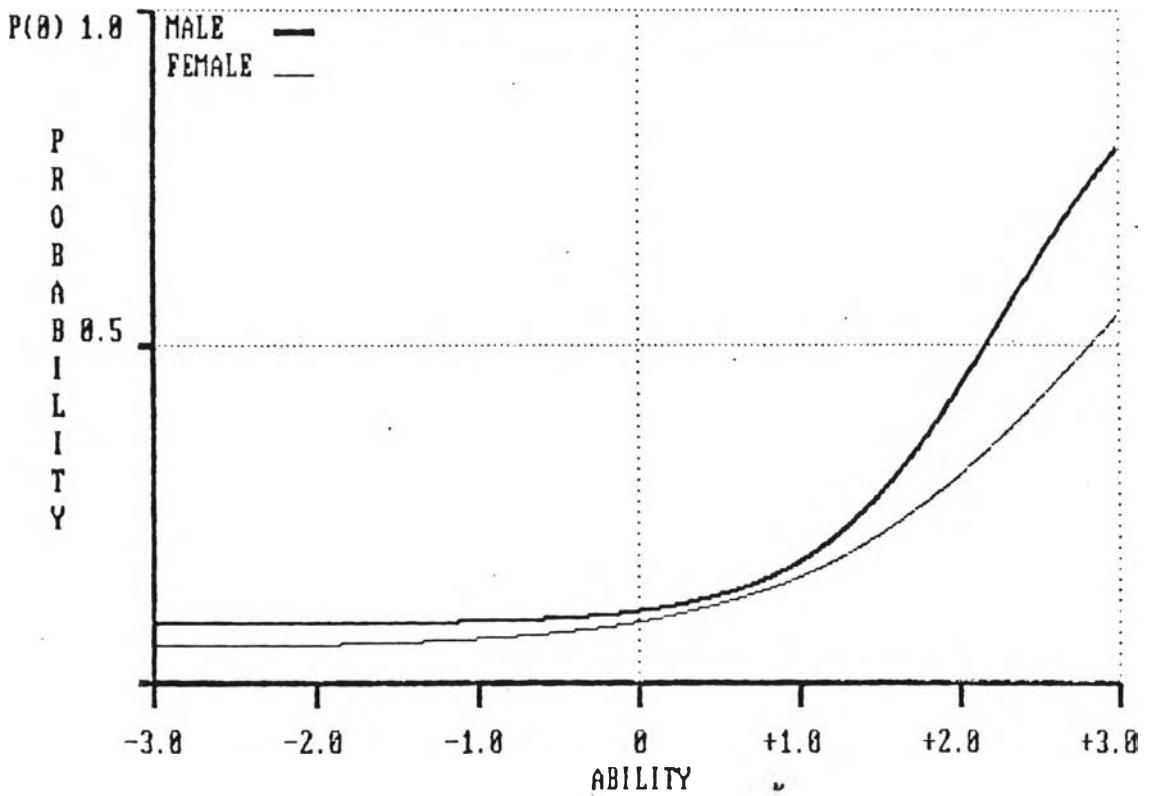


FIGURE 188 PLOT ITEM CHARACTERISTIC CURVE (no 59)



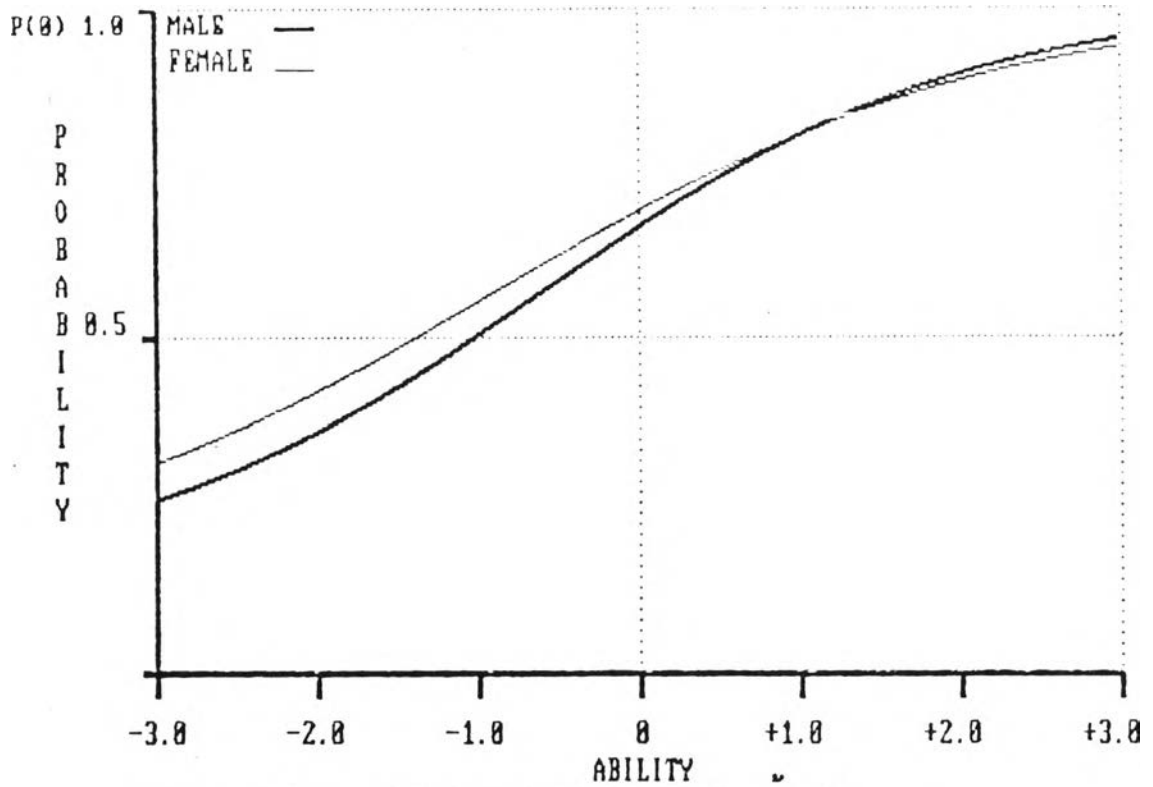


FIGURE 109 PLOT ITEM CHARACTERISTIC CURVE (Item 60)

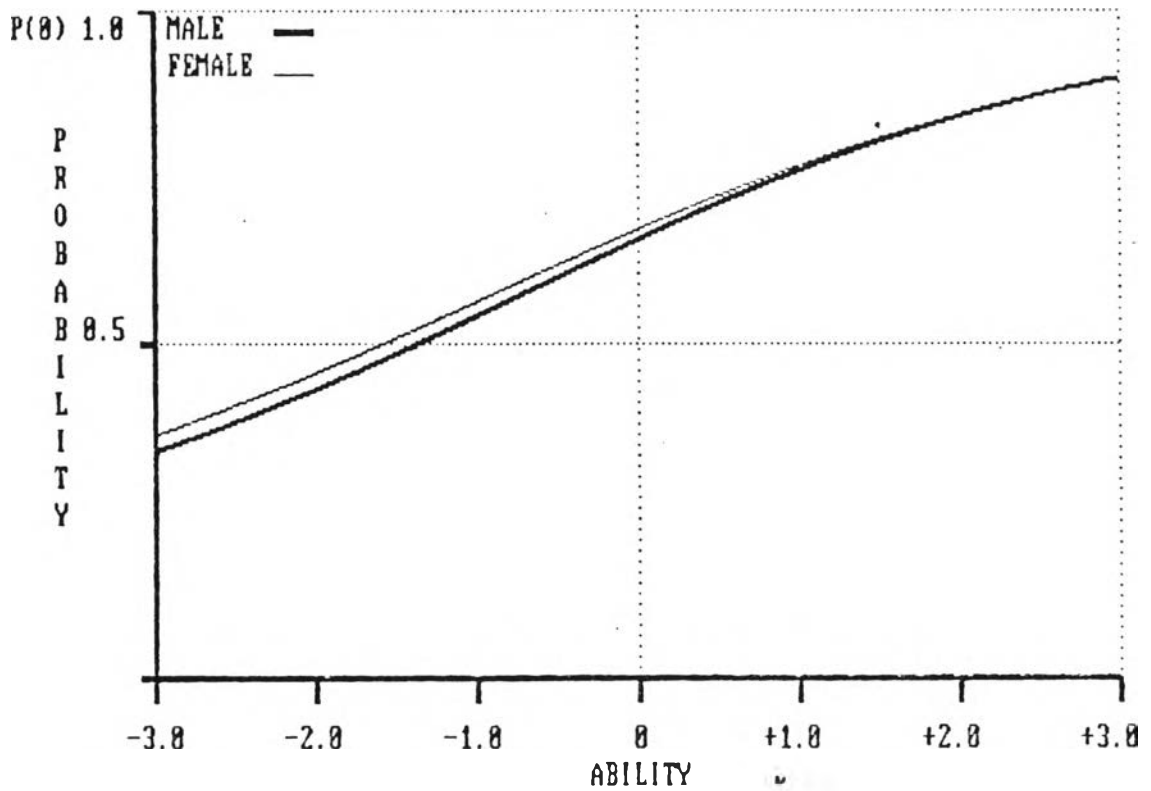


FIGURE 110 PLOT ITEM CHARACTERISTIC CURVE (Item 61)

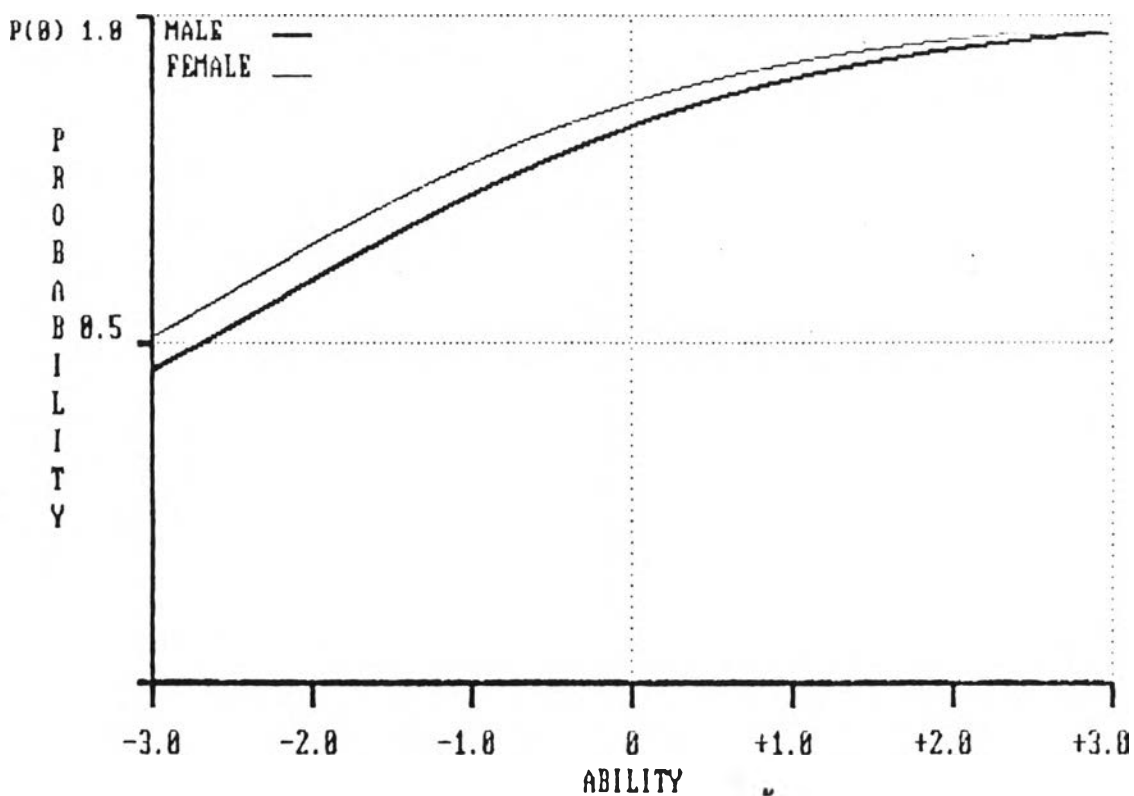


FIGURE 111 PLOT ITEM CHARACTERISTIC CURVE (no 66)

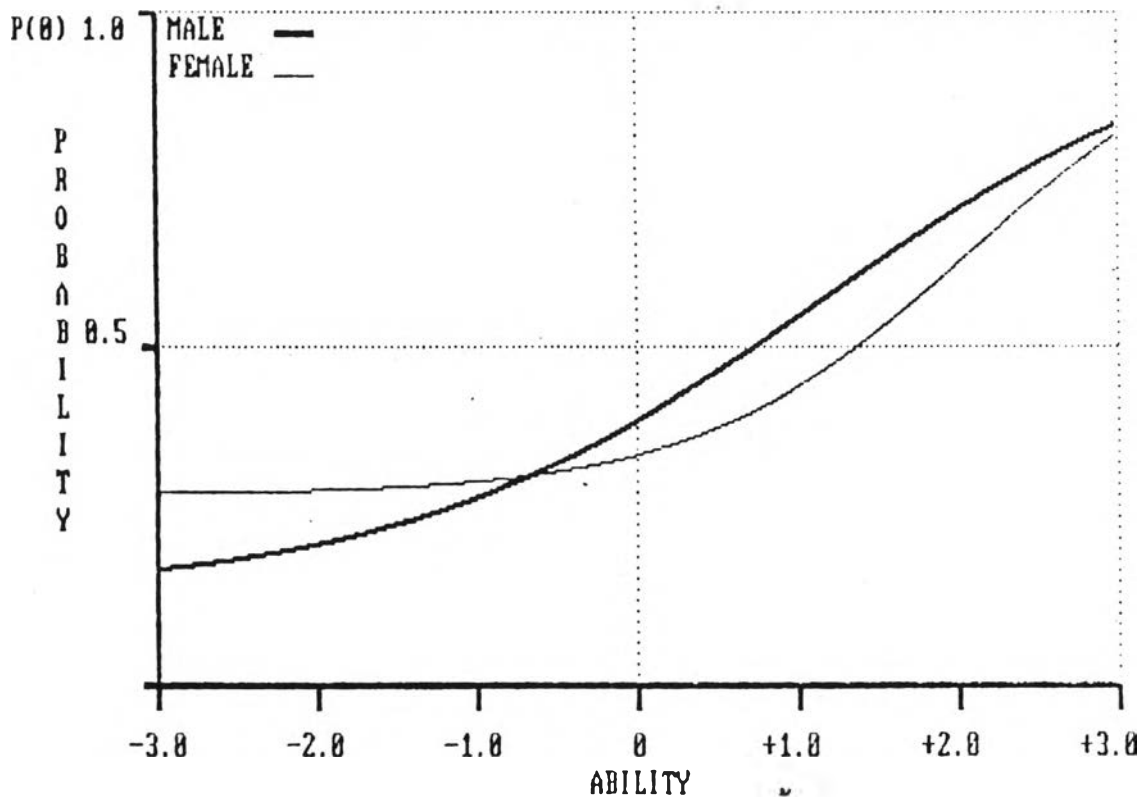


FIGURE 112 PLOT ITEM CHARACTERISTIC CURVE (no 67)

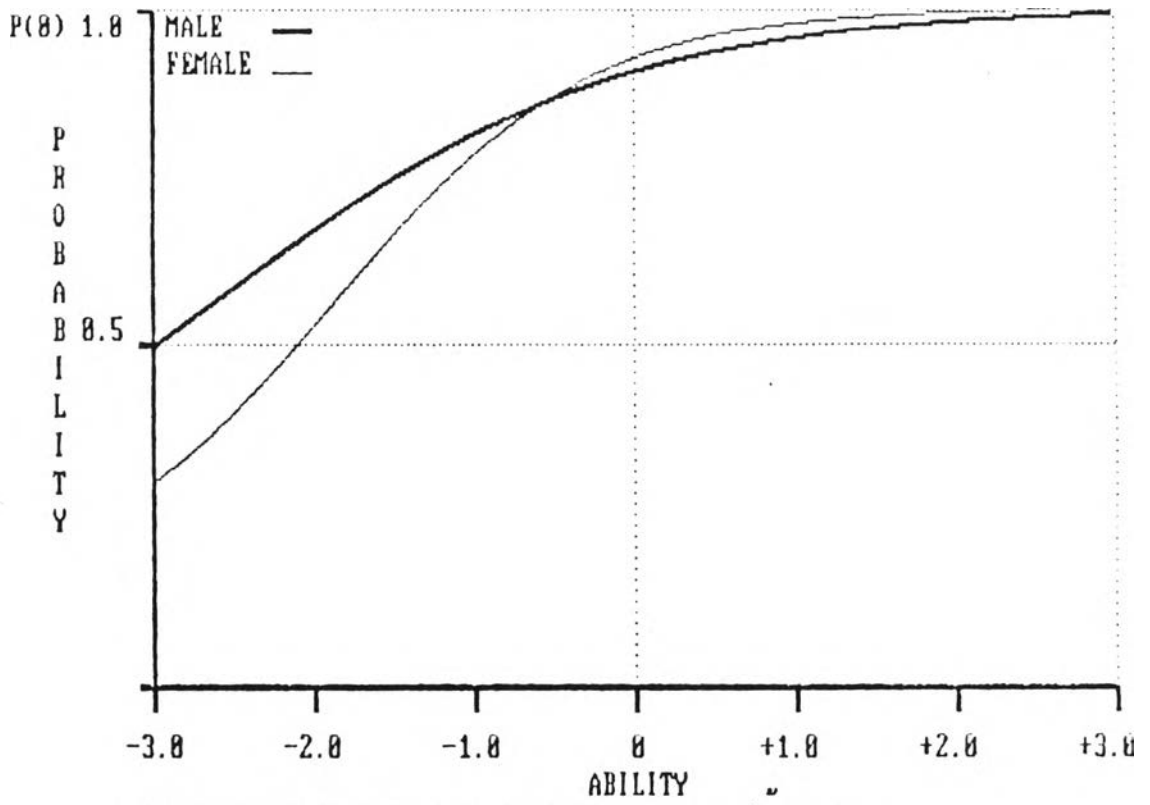


FIGURE 113 PLOT ITEM CHARACTERISTIC CURVE (72)

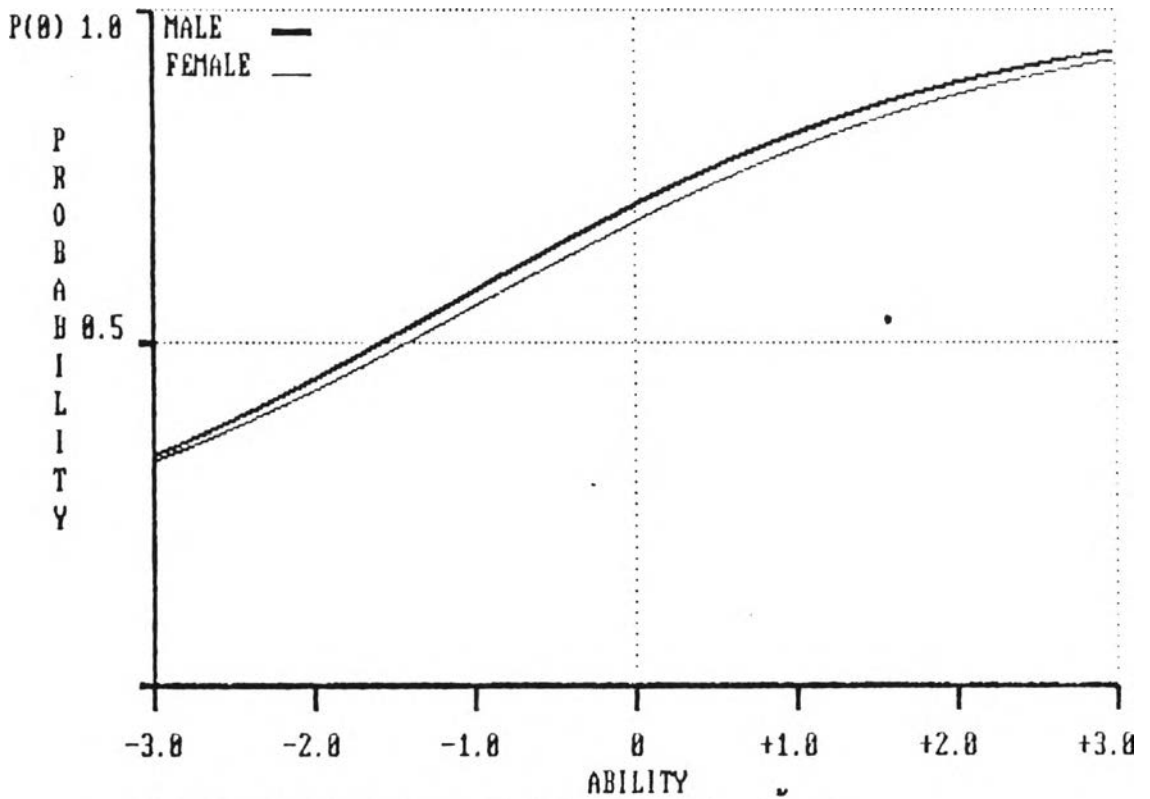


FIGURE 114 PLOT ITEM CHARACTERISTIC CURVE (75)

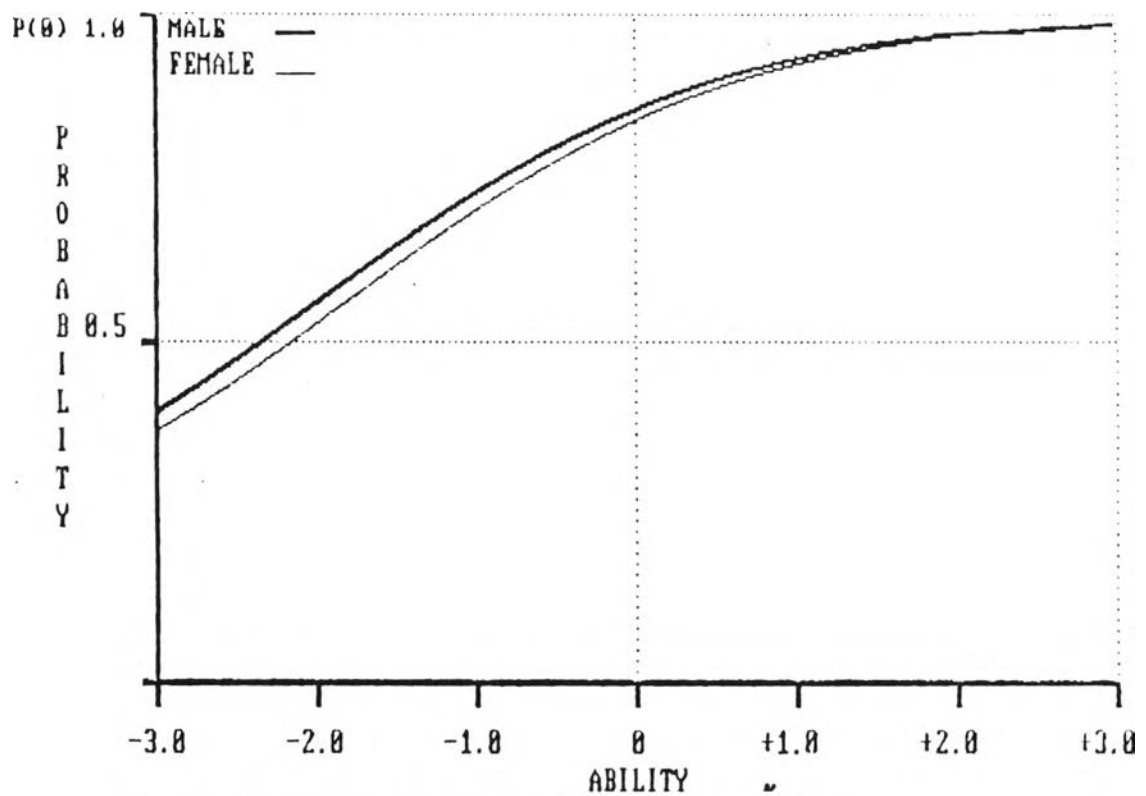


FIGURE 115 PLOT ITEM CHARACTERISTIC CURVE (ID 77)

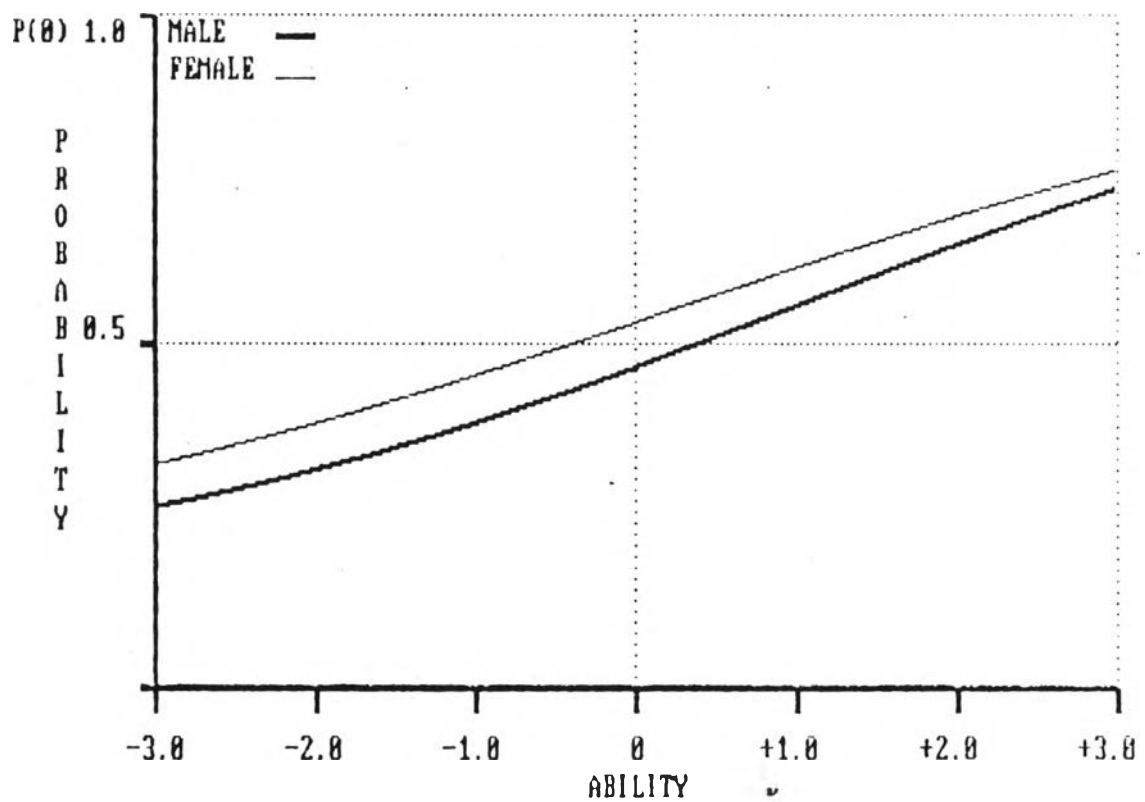


FIGURE 116 PLOT ITEM CHARACTERISTIC CURVE (ID 78)

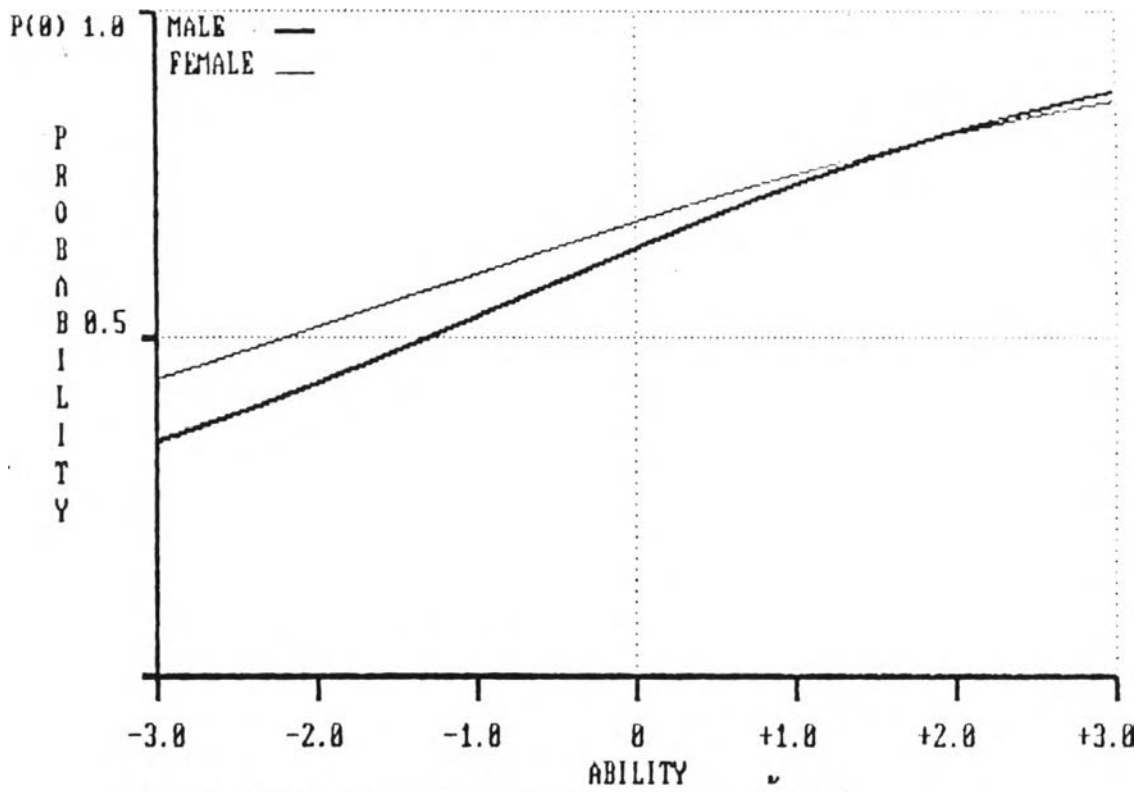


FIGURE 117 PLOT ITEM CHARACTERISTIC CURVE (Item 79)

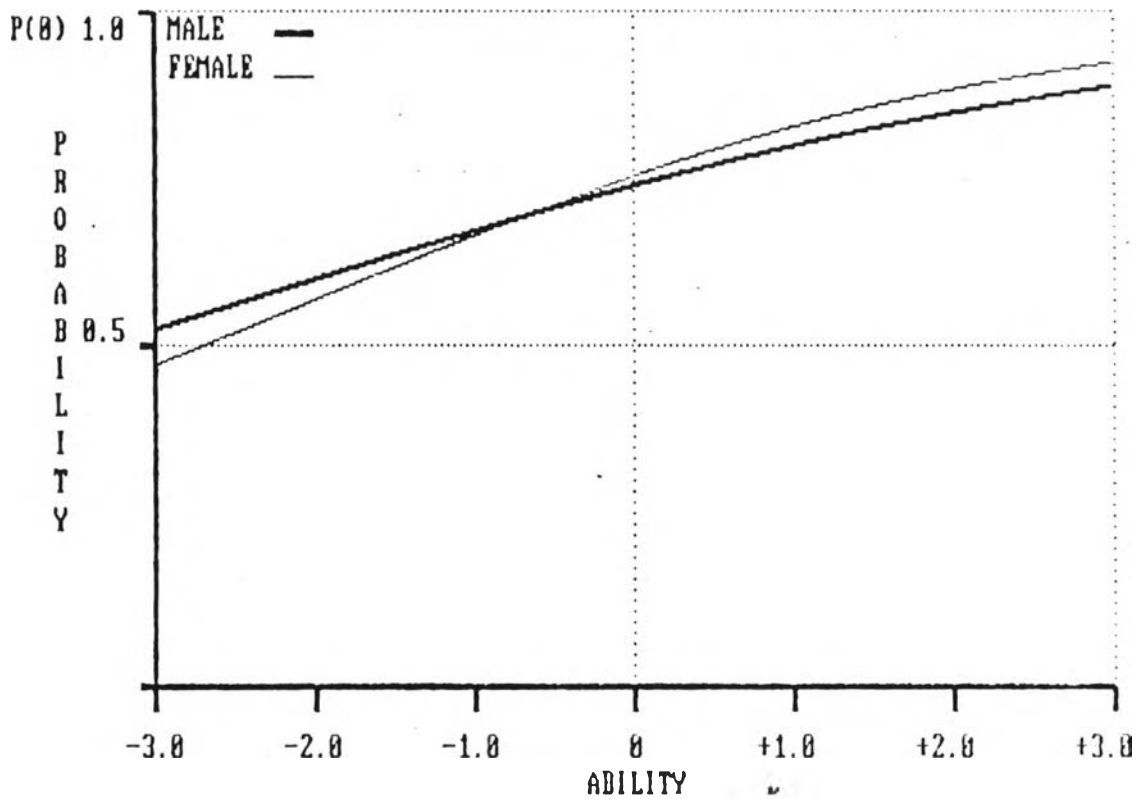


FIGURE 118 PLOT ITEM CHARACTERISTIC CURVE (Item 80)

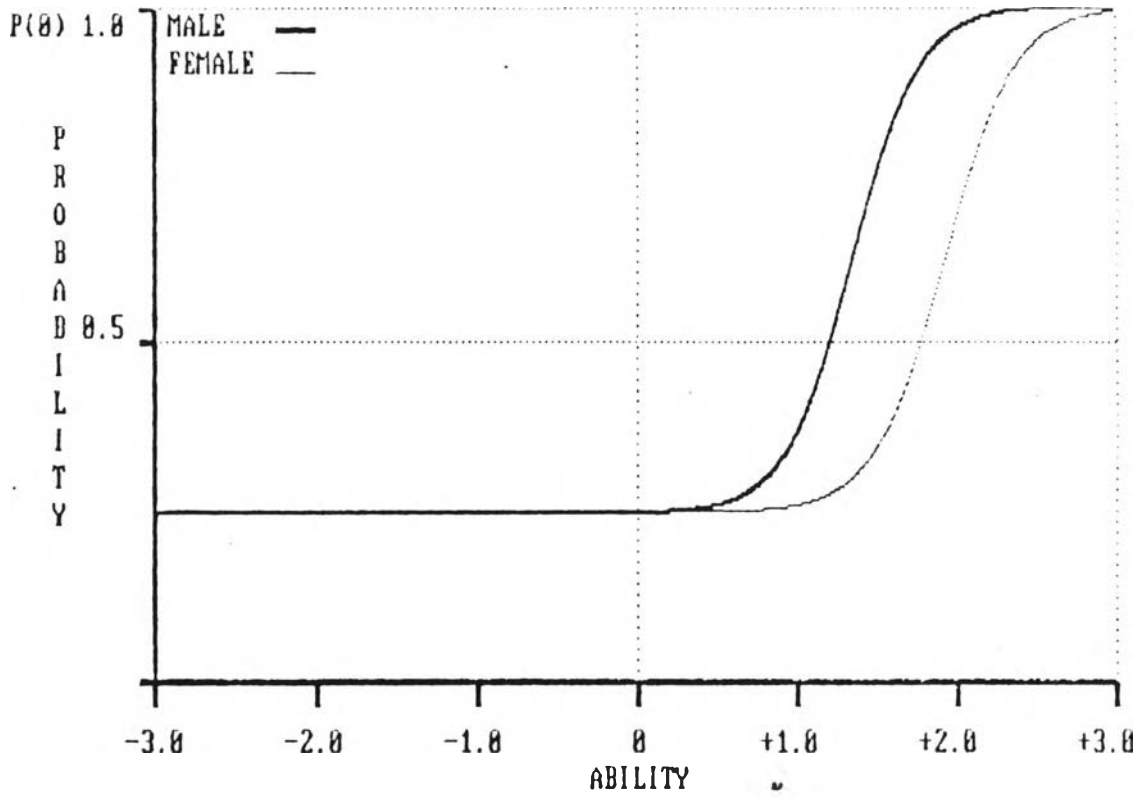


FIGURE 119 PLOT ITEM CHARACTERISTIC CURVE (π 0 81)

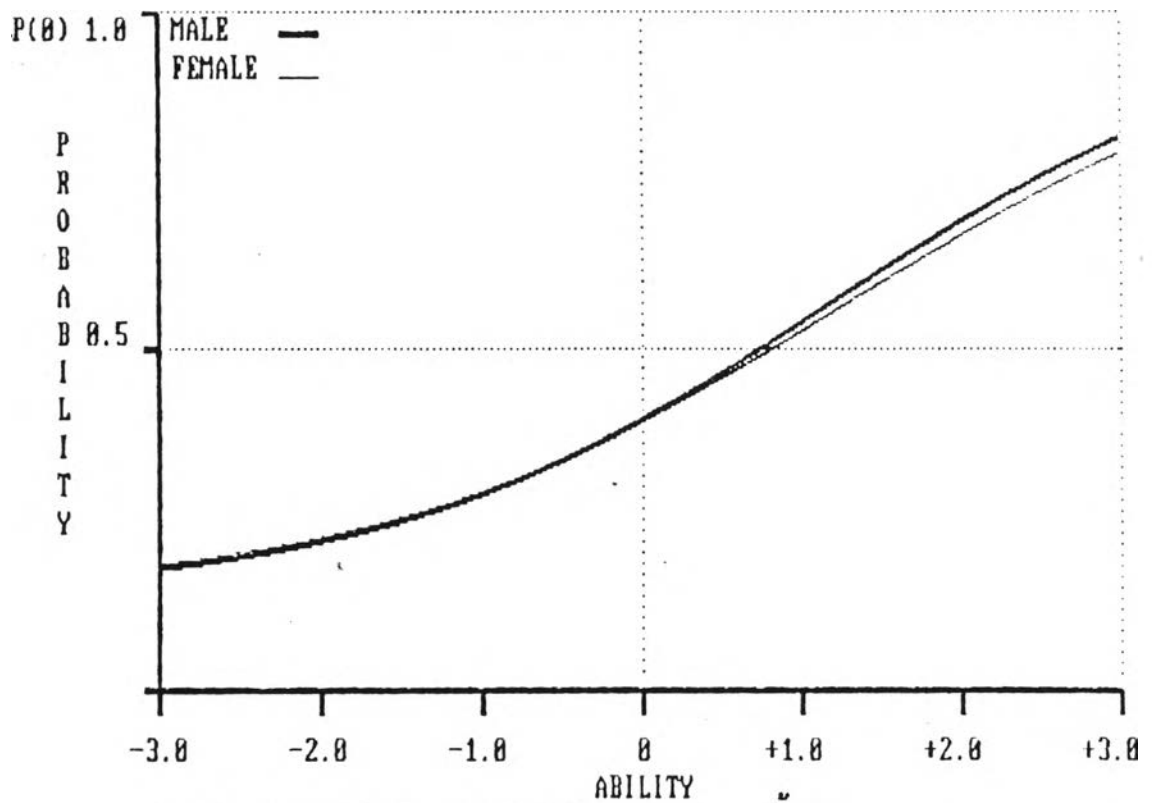


FIGURE 120 PLOT ITEM CHARACTERISTIC CURVE (π 0 84)

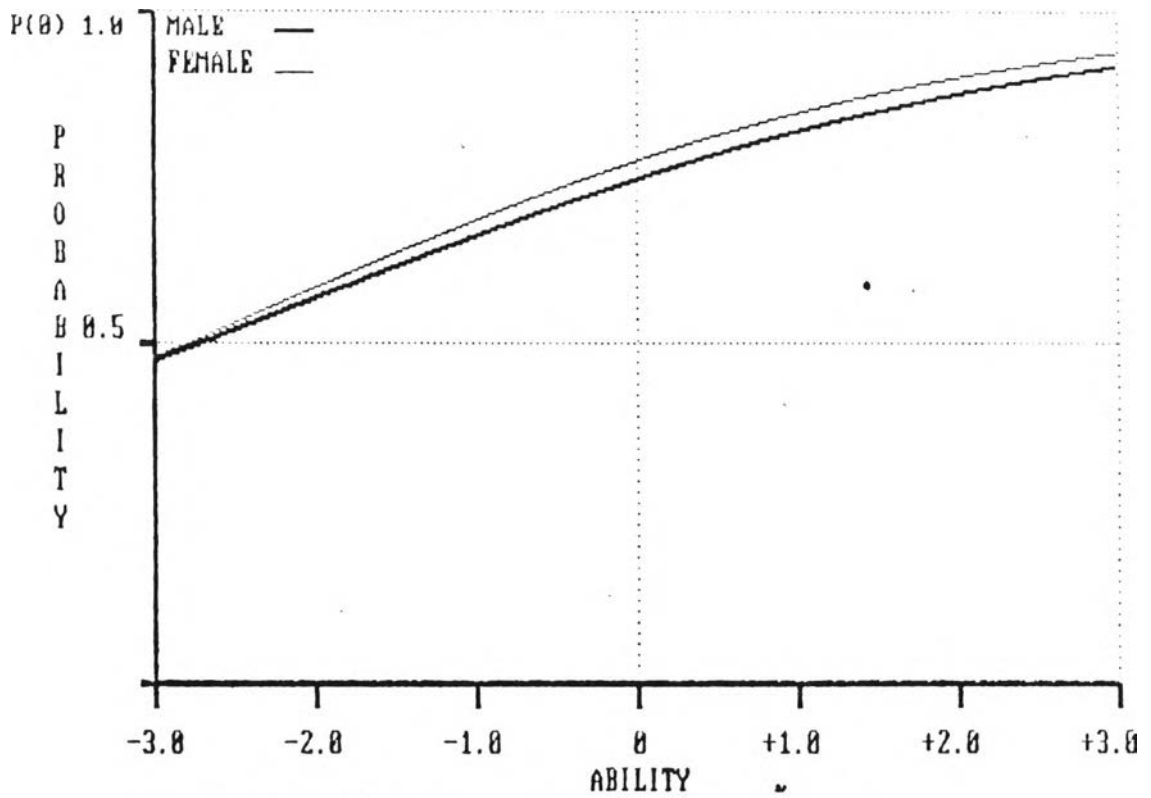


FIGURE 121 PLOT ITEM CHARACTERISTIC CURVE (Item 86)

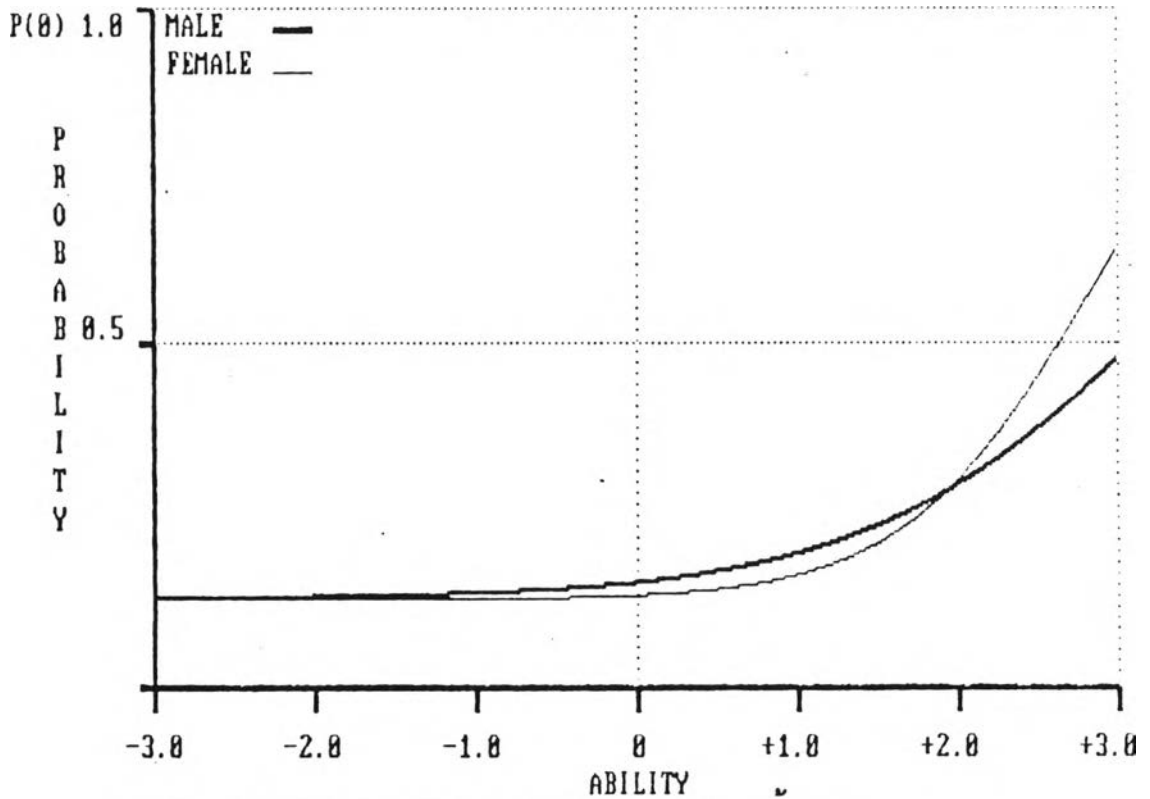


FIGURE 122 PLOT ITEM CHARACTERISTIC CURVE (Item 87)

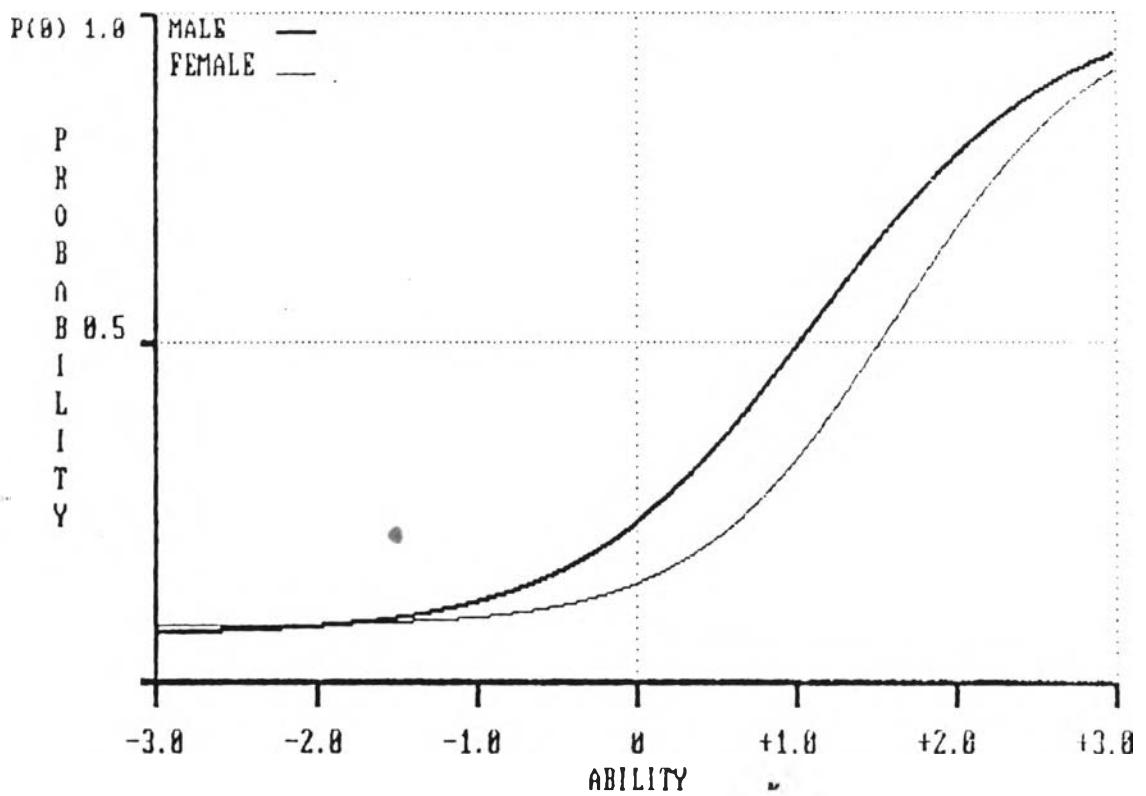


FIGURE 123 PLOT ITEM CHARACTERISTIC CURVE (8088)

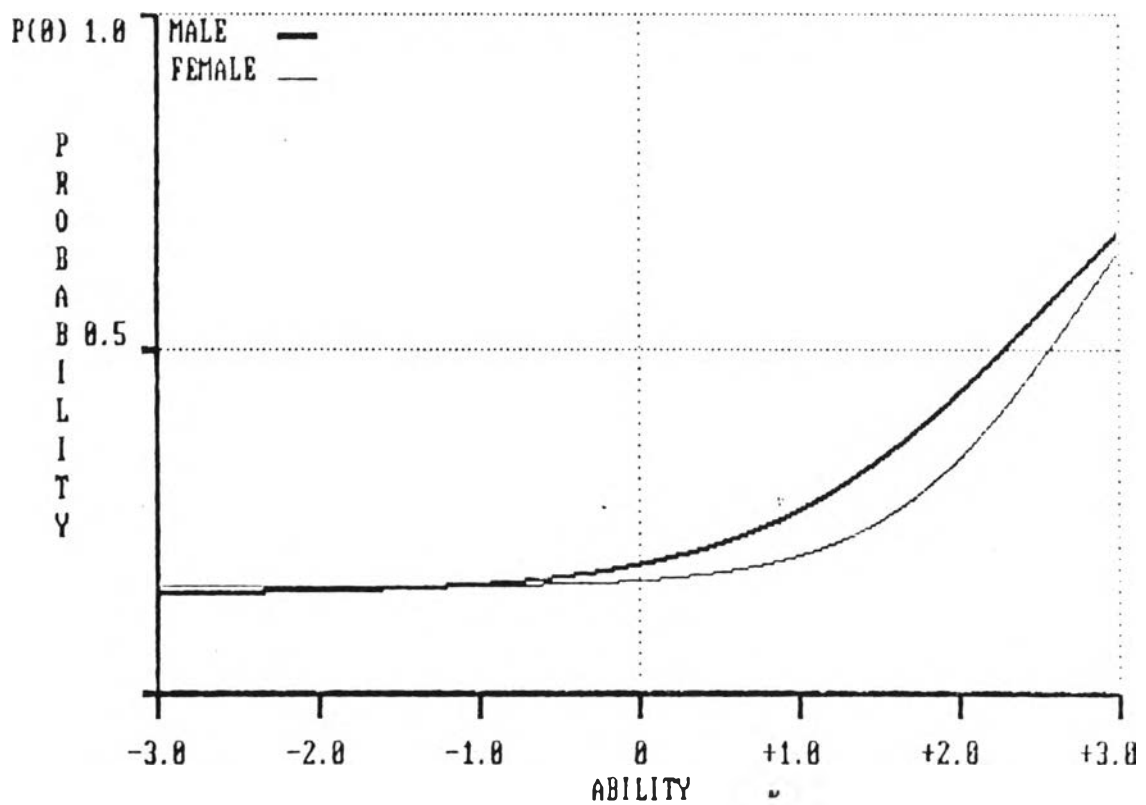


FIGURE 124 PLOT ITEM CHARACTERISTIC CURVE (8090)



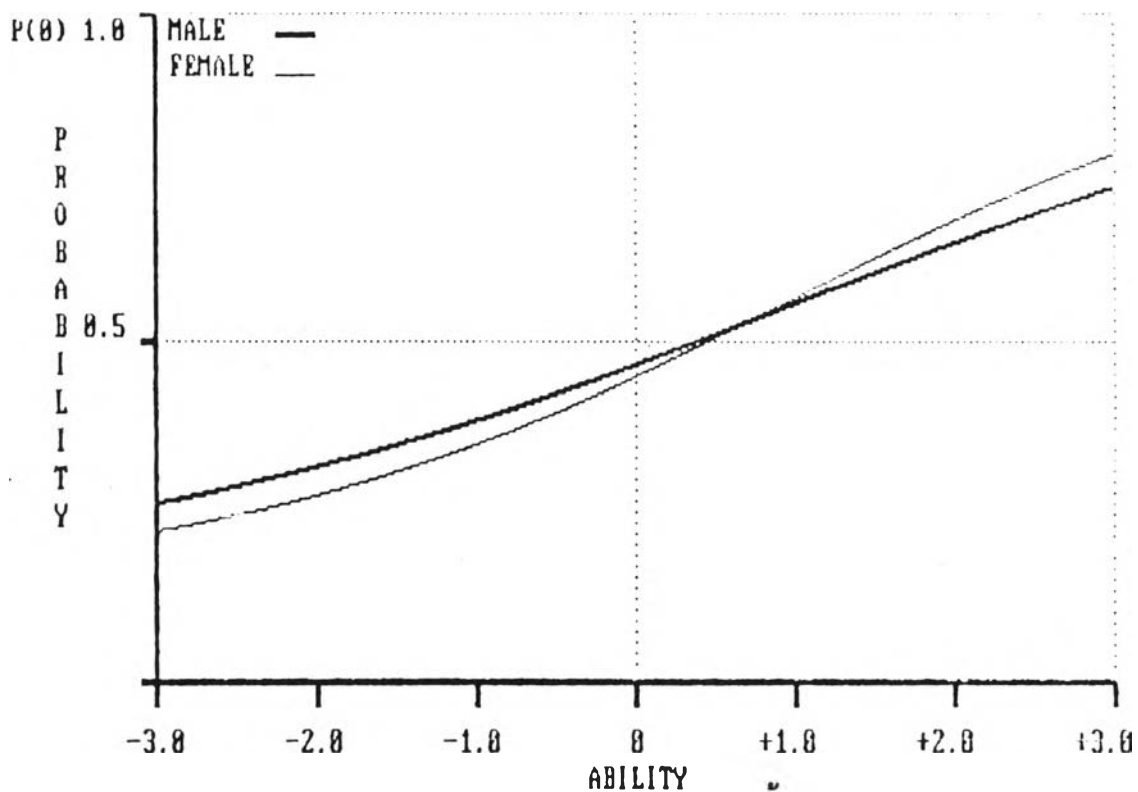


FIGURE 125 PLOT ITEM CHARACTERISTIC CURVE (ID 91)

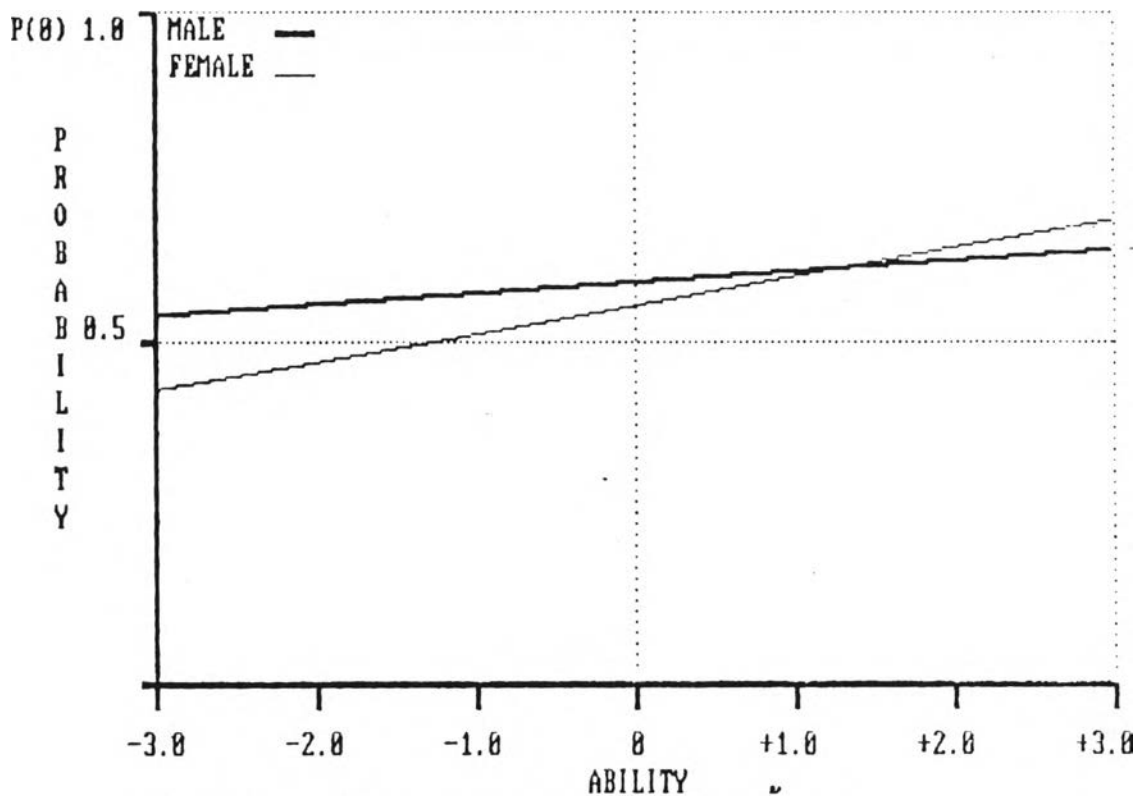


FIGURE 126 PLOT ITEM CHARACTERISTIC CURVE (ID 92)

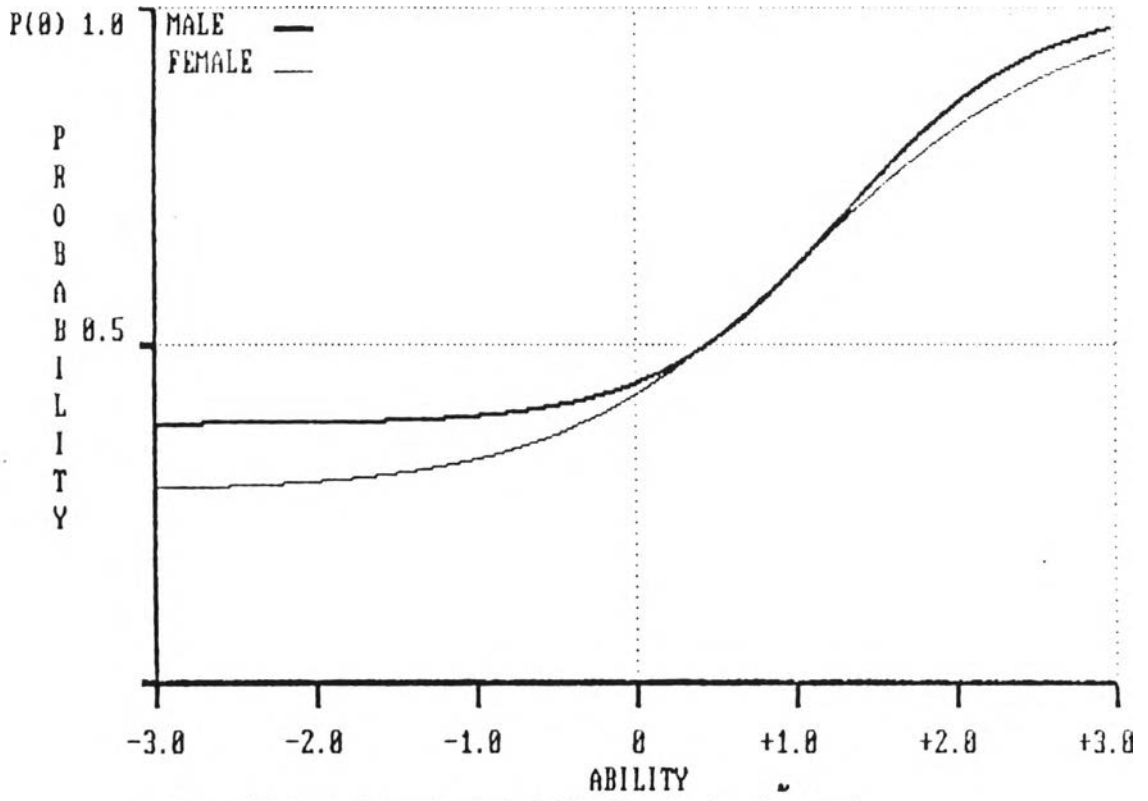


FIGURE 127 PLOT ITEM CHARACTERISTIC CURVE (ID 95)

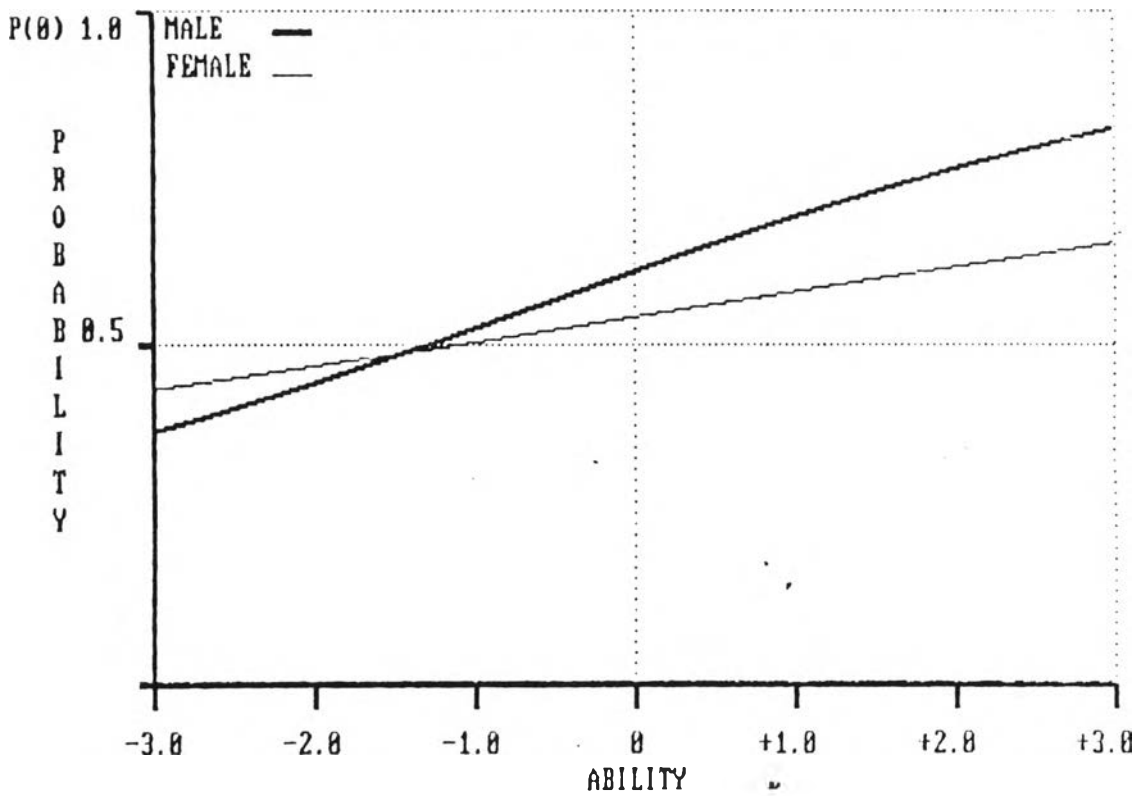


FIGURE 128 PLOT ITEM CHARACTERISTIC CURVE (ID 96)

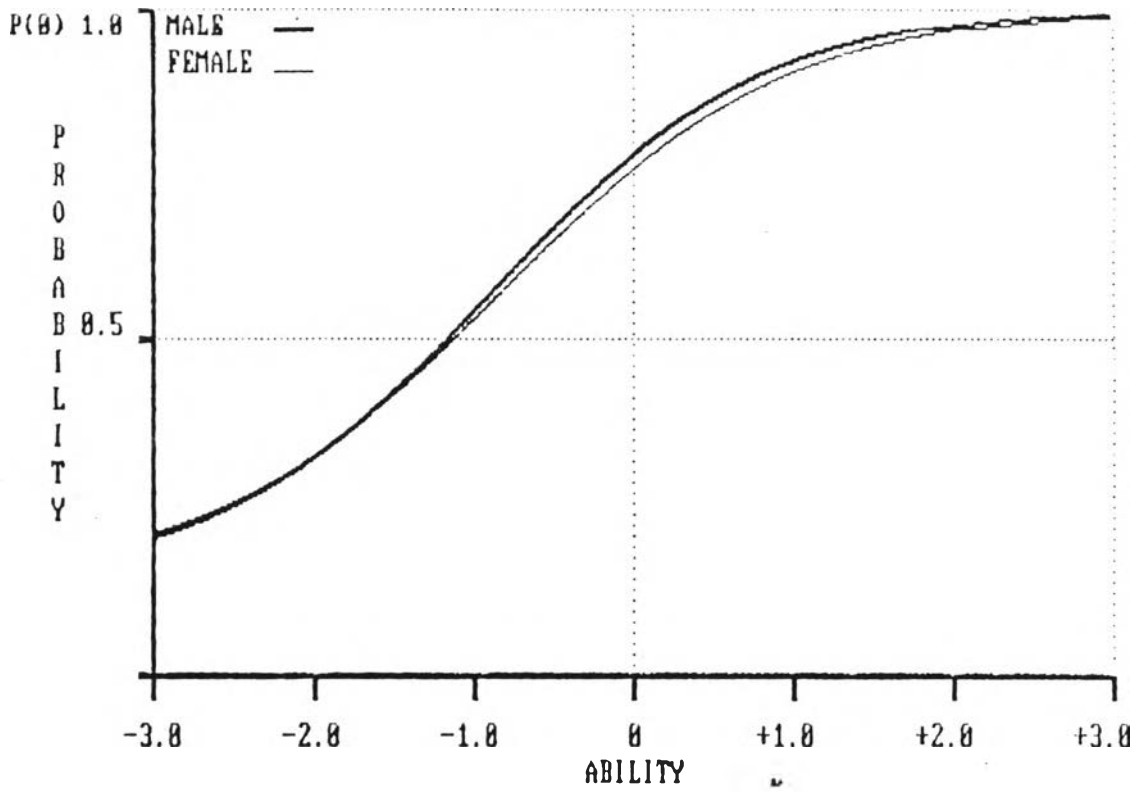


FIGURE 129 PLOT ITEM CHARACTERISTIC CURVE (ID 97)

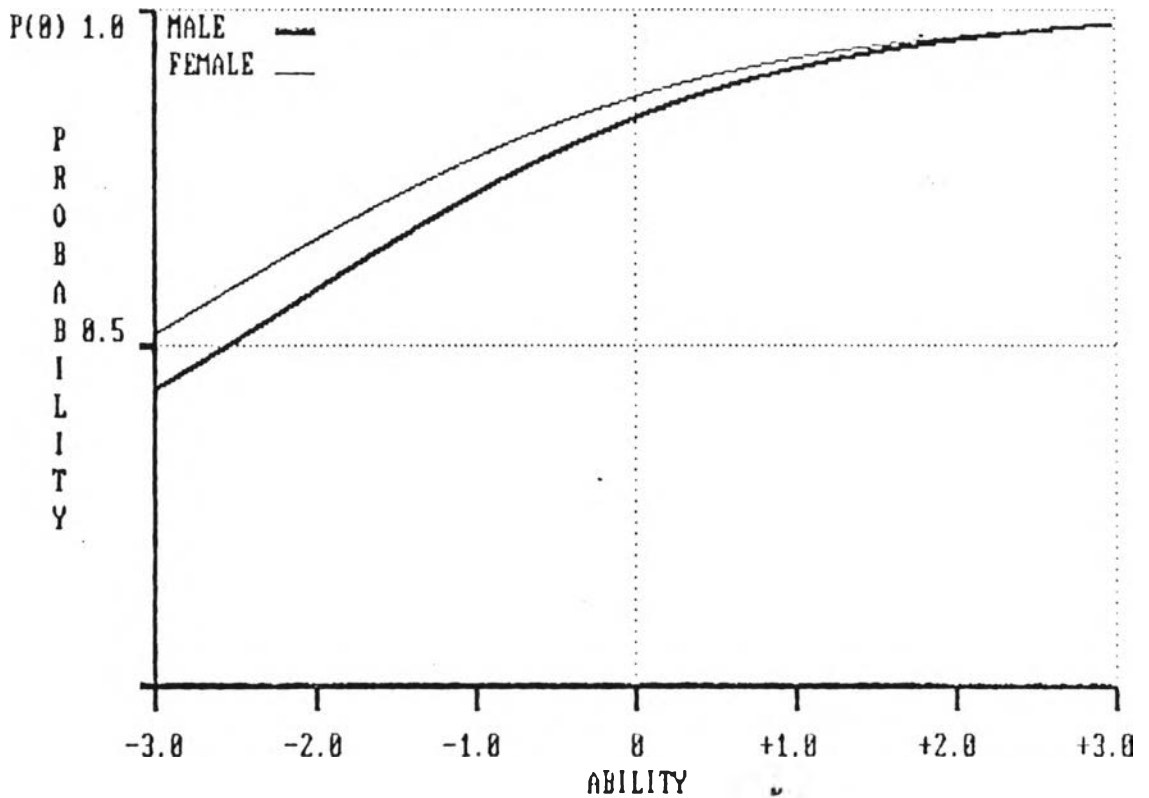


FIGURE 130 PLOT ITEM CHARACTERISTIC CURVE (ID 99)

โค้งลักษณะข้อสอบจากแบบสอนฉบับที่ 3

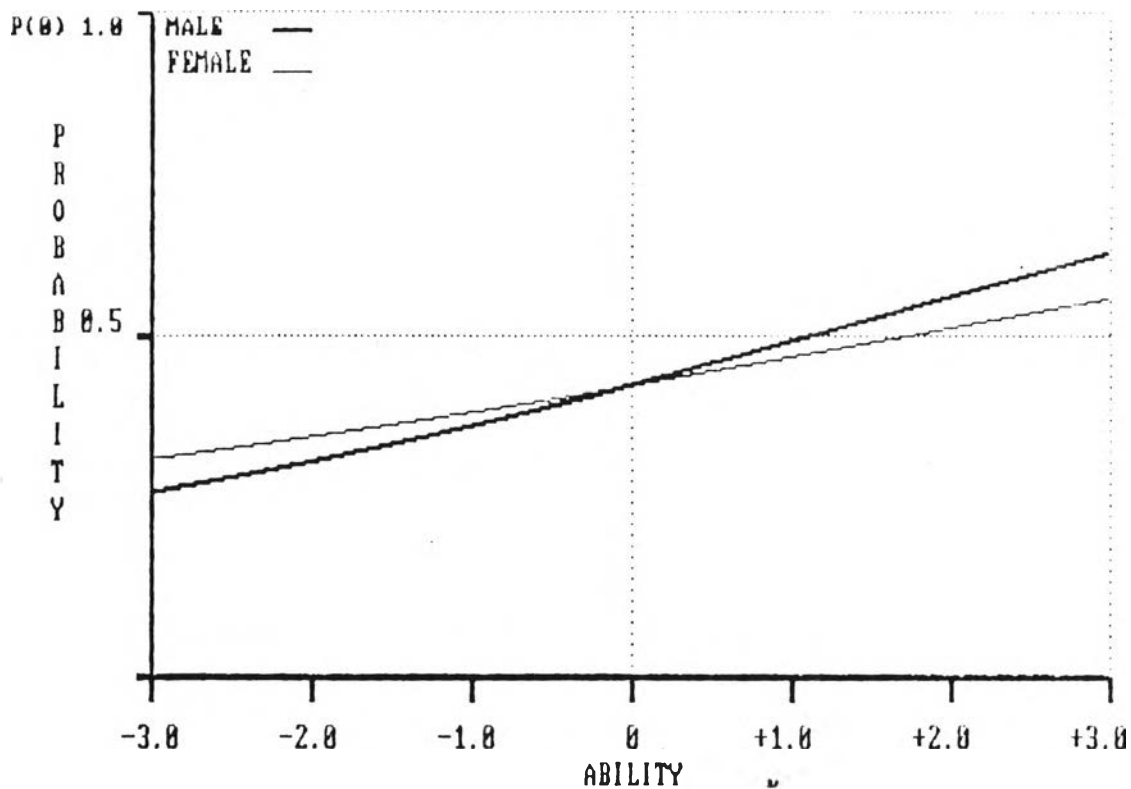


FIGURE 131 PLOT ITEM CHARACTERISTIC CURVE (no 1)

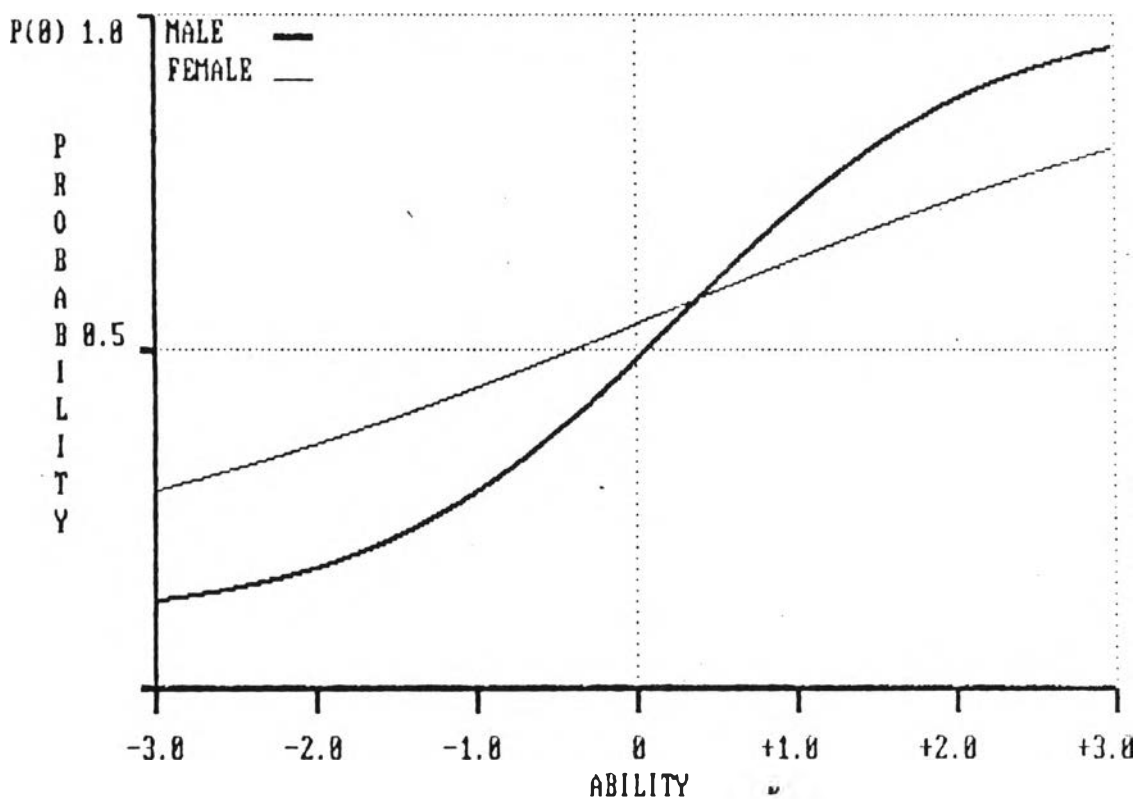


FIGURE 132 PLOT ITEM CHARACTERISTIC CURVE (no 2)

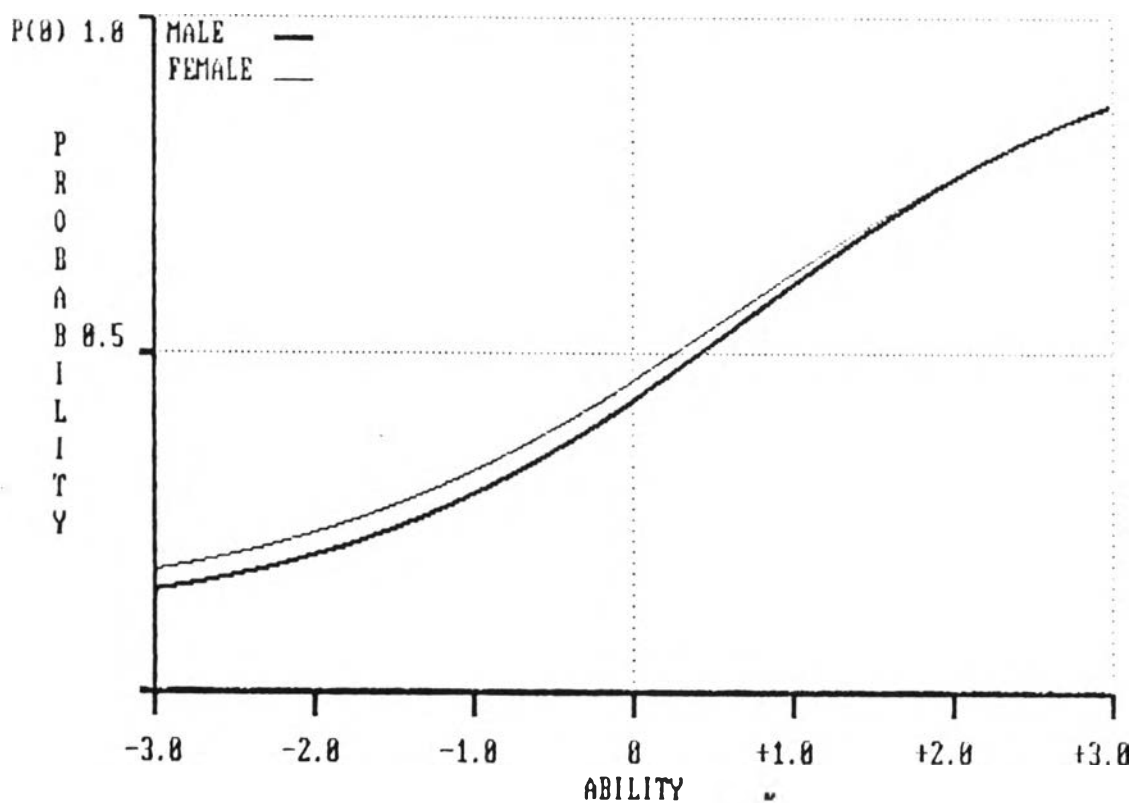


FIGURE 133 PLOT ITEM CHARACTERISTIC CURVE (Fig 3)

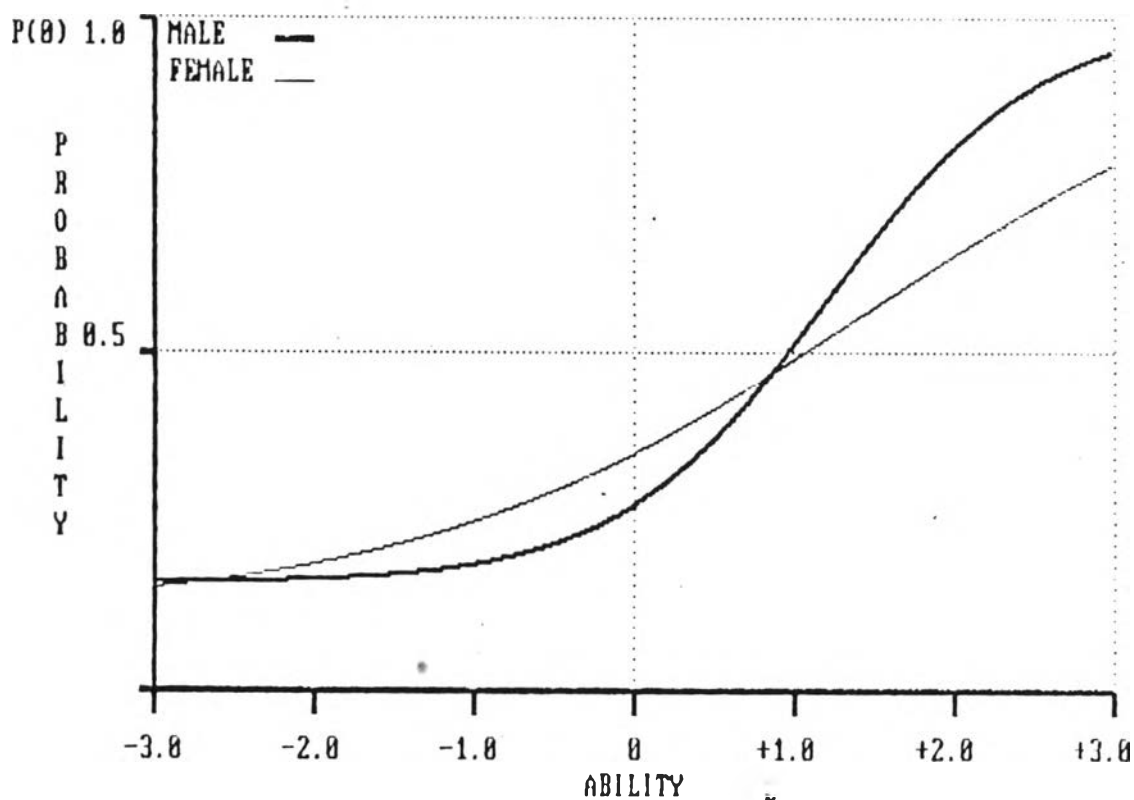


FIGURE 134 PLOT ITEM CHARACTERISTIC CURVE (Fig 4)

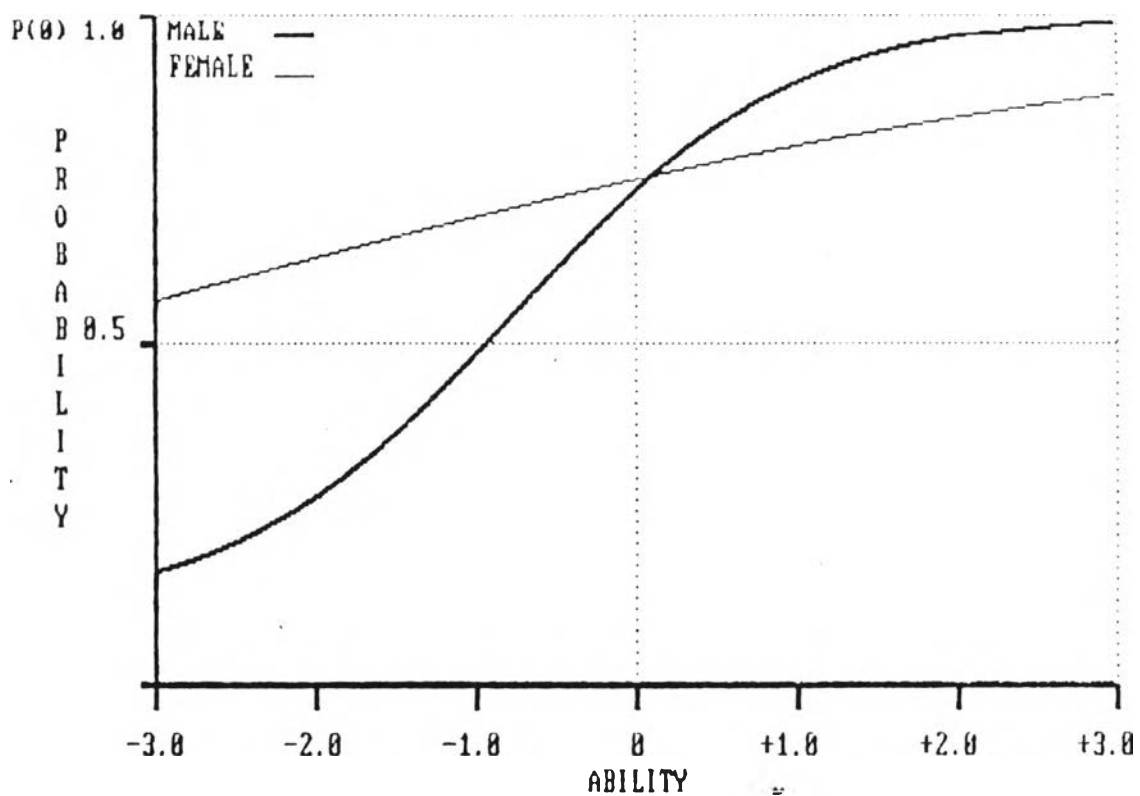


FIGURE 135 PLOT ITEM CHARACTERISTIC CURVE (005)

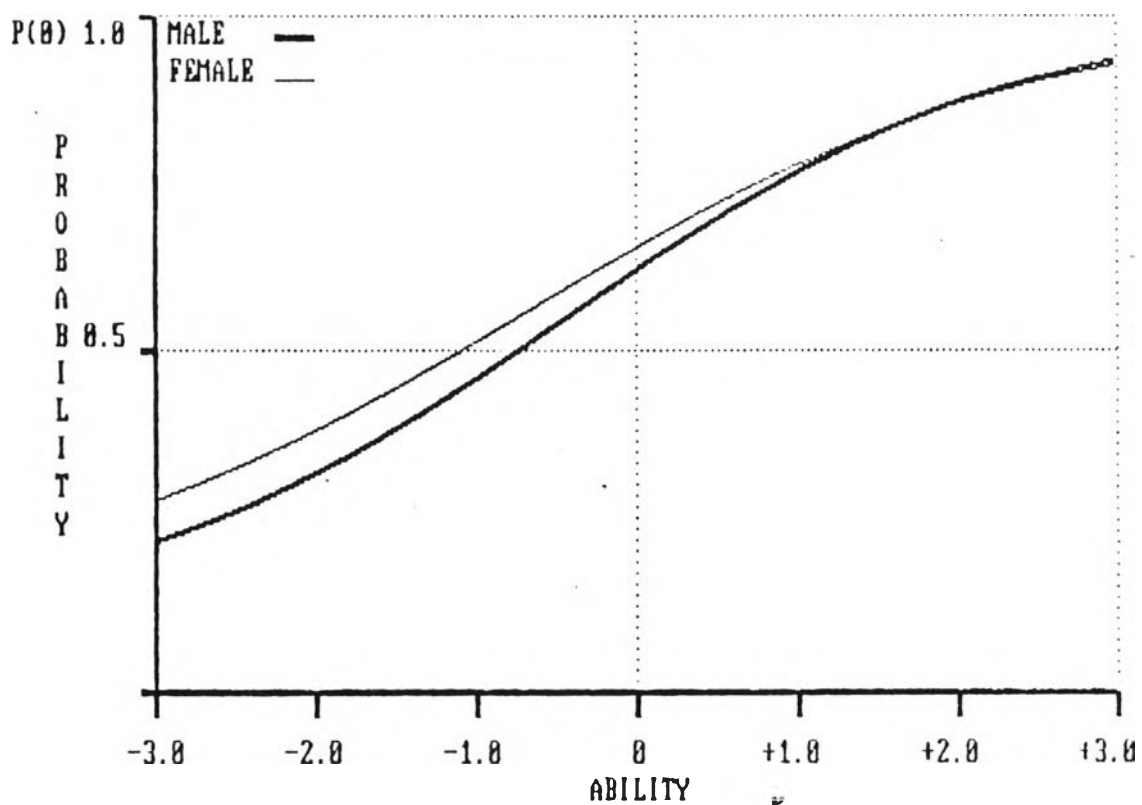


FIGURE 136 PLOT ITEM CHARACTERISTIC CURVE (007)

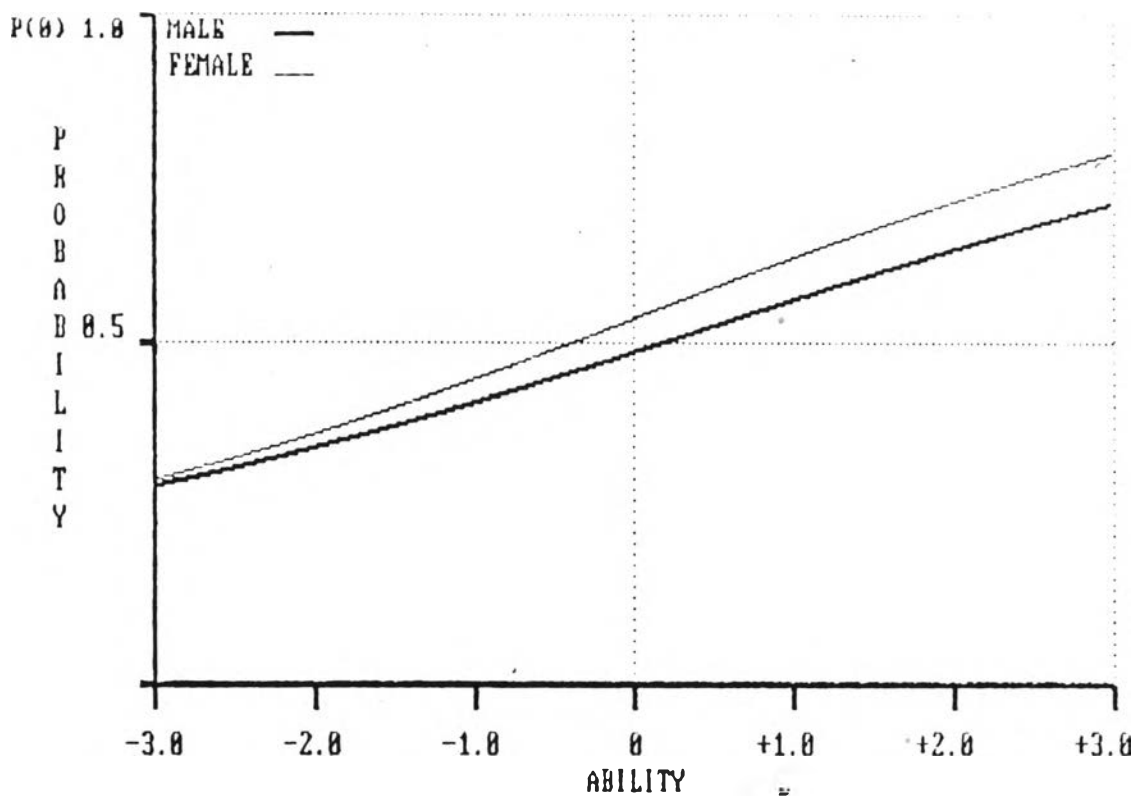


FIGURE 137 PLOT ITEM CHARACTERISTIC CURVE (no 9)

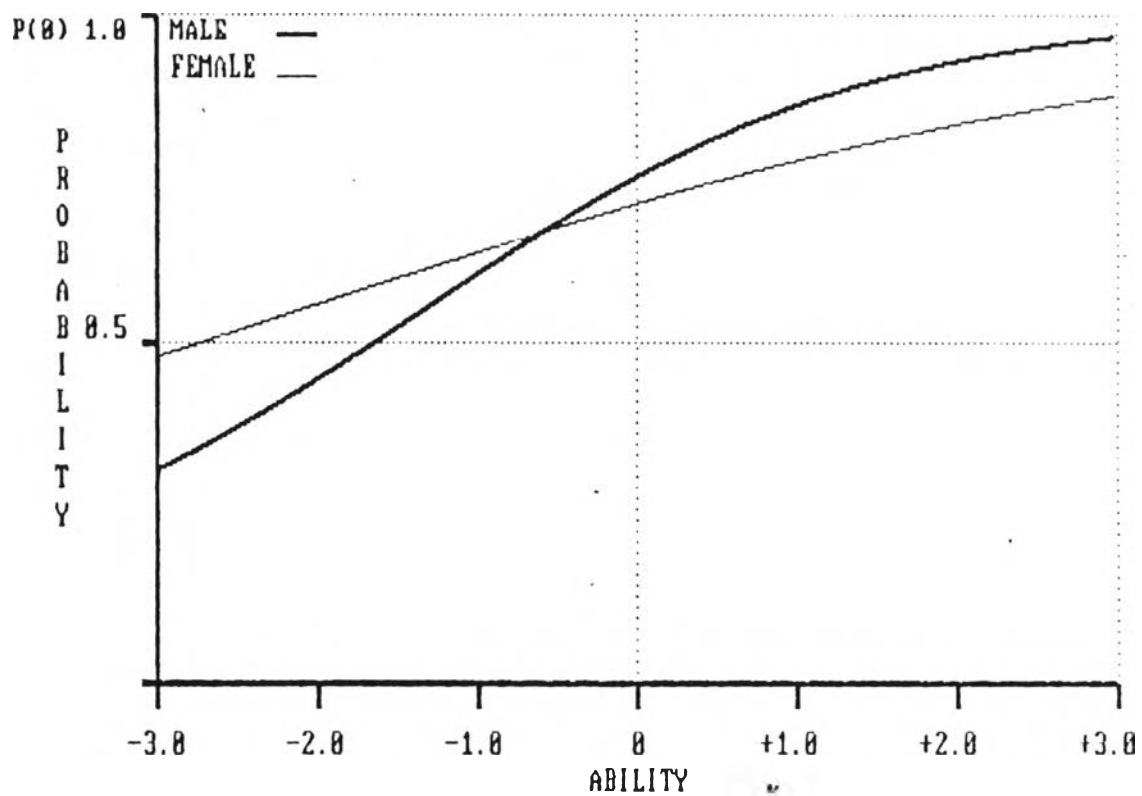


FIGURE 138 PLOT ITEM CHARACTERISTIC CURVE (no 10)



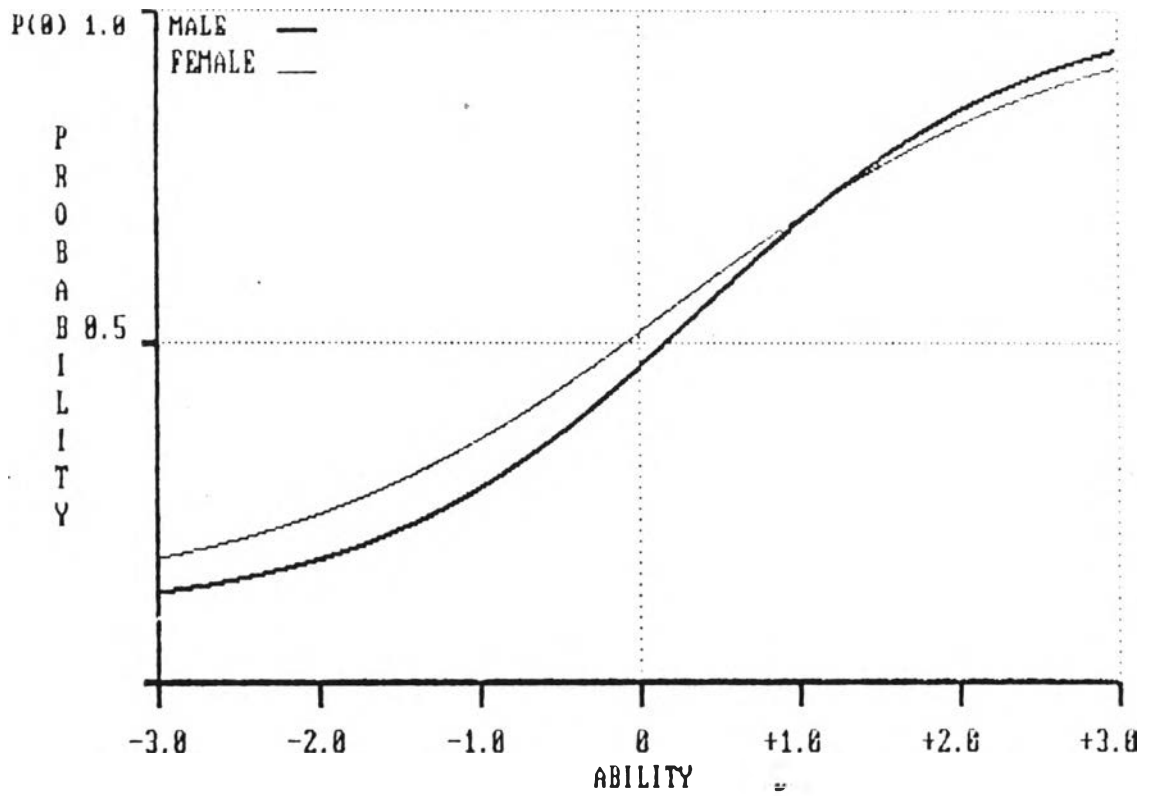


FIGURE 139 PLOT ITEM CHARACTERISTIC CURVE (no 11)

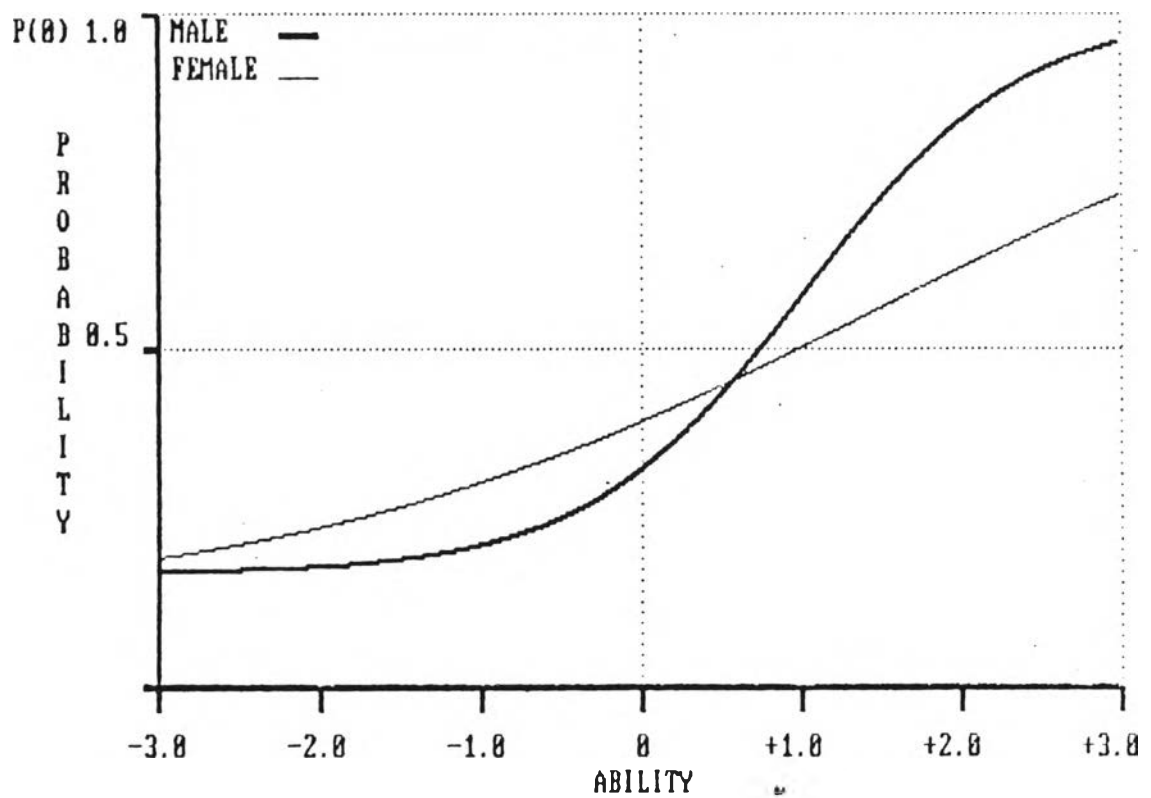


FIGURE 140 PLOT ITEM CHARACTERISTIC CURVE (no 12)

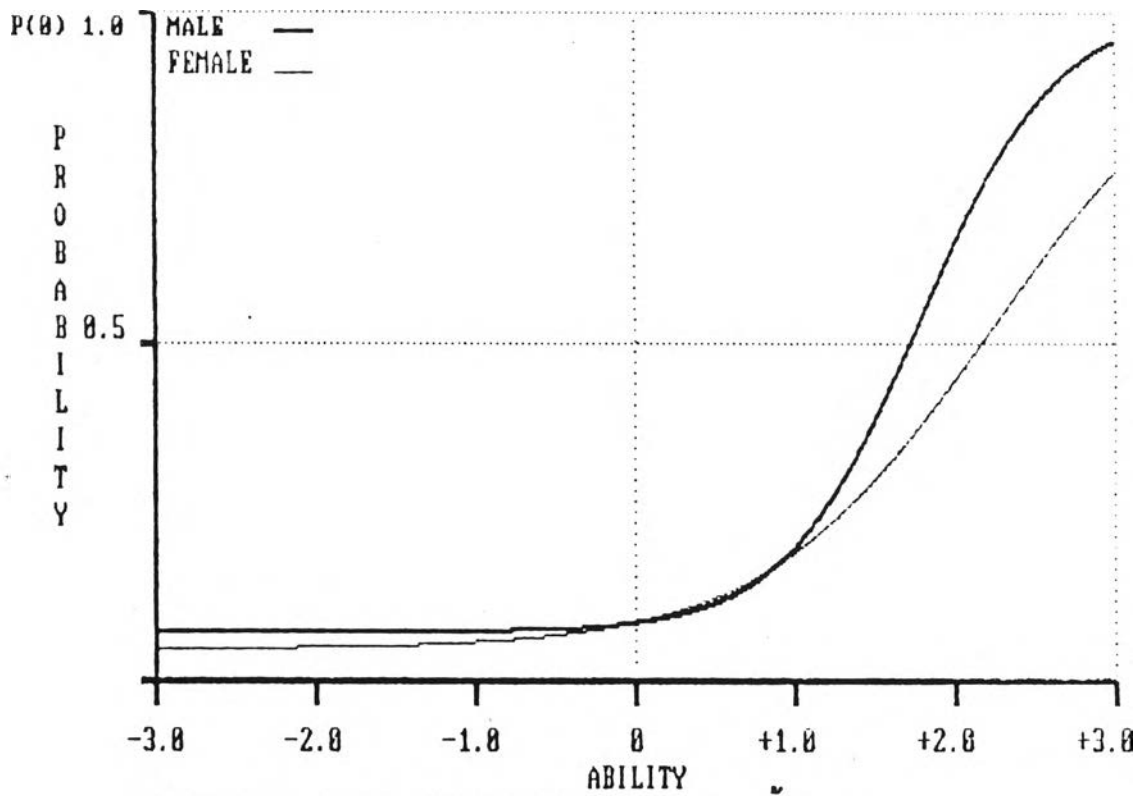


FIGURE 141 PLOT ITEM CHARACTERISTIC CURVE (no 13)

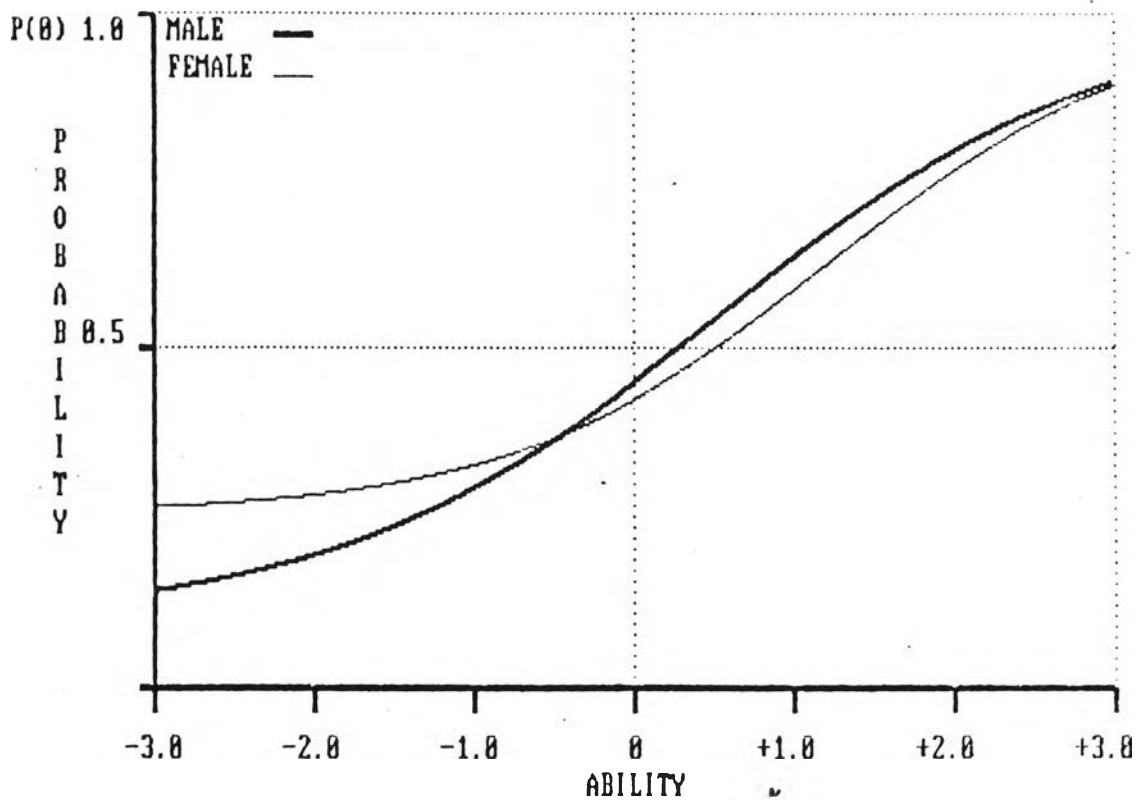


FIGURE 142 PLOT ITEM CHARACTERISTIC CURVE (no 14)

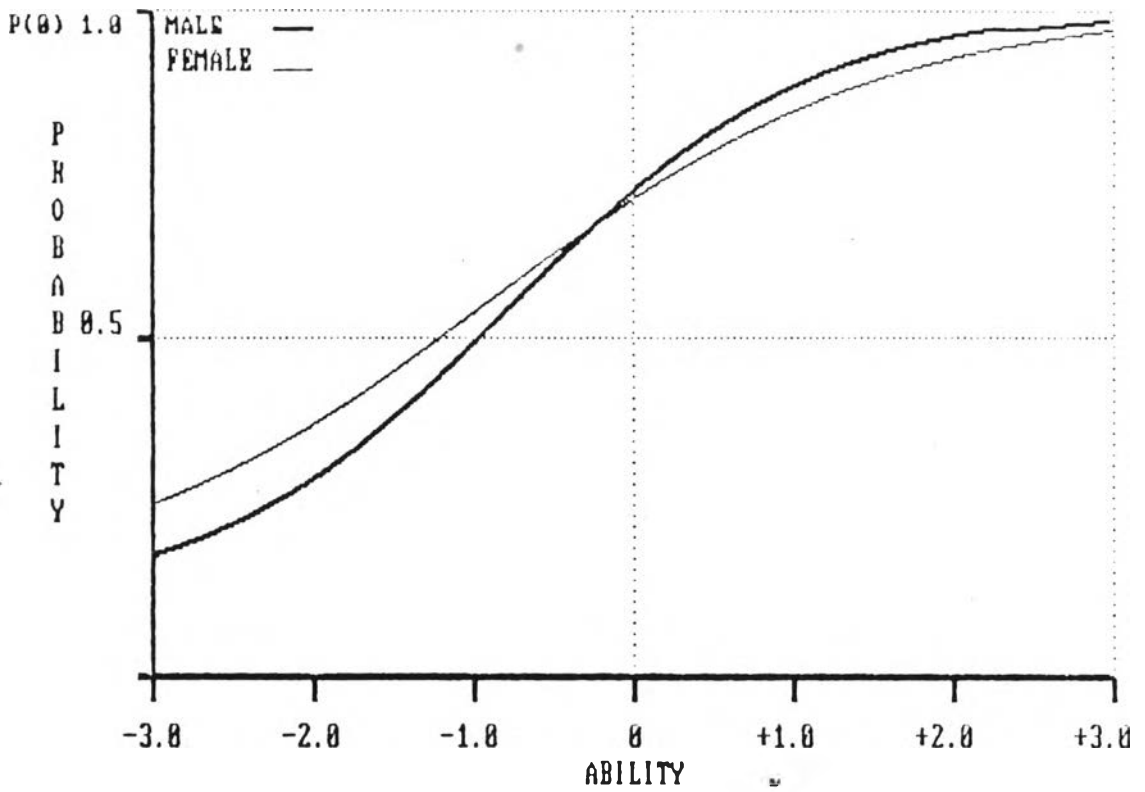


FIGURE 143 PLOT ITEM CHARACTERISTIC CURVE (no 15)

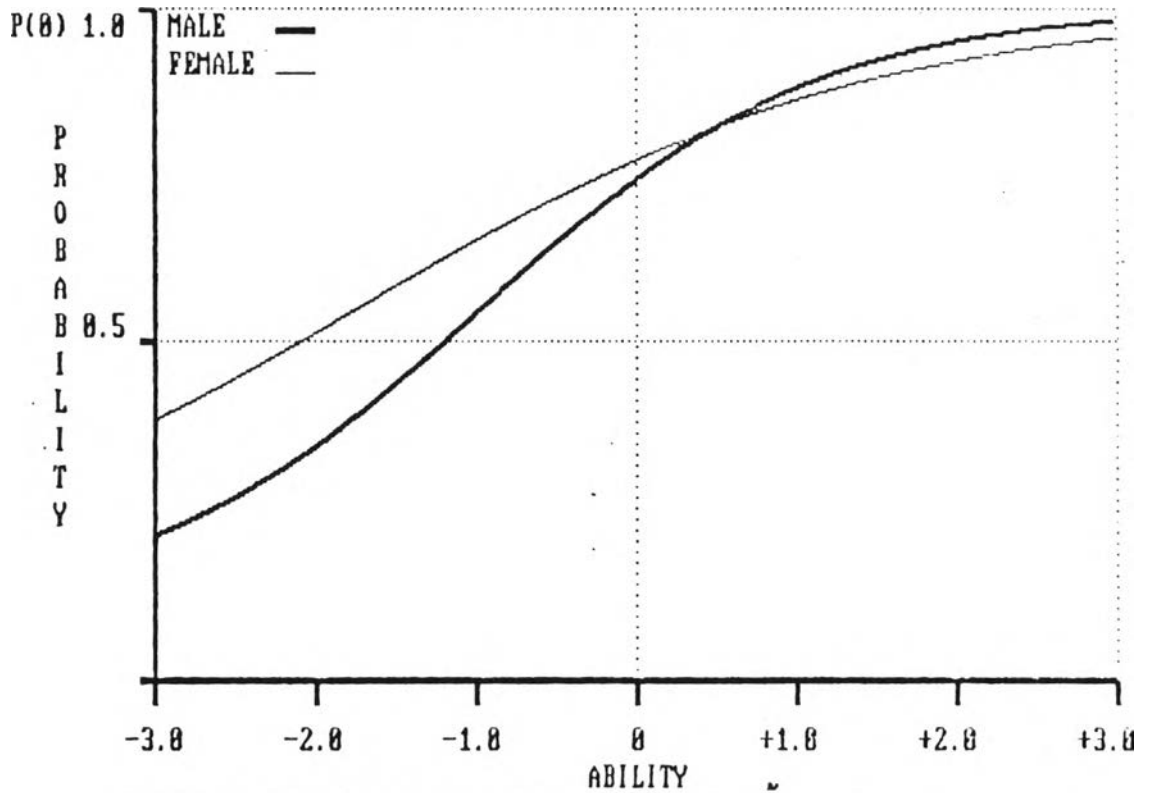


FIGURE 144 PLOT ITEM CHARACTERISTIC CURVE (no 16)

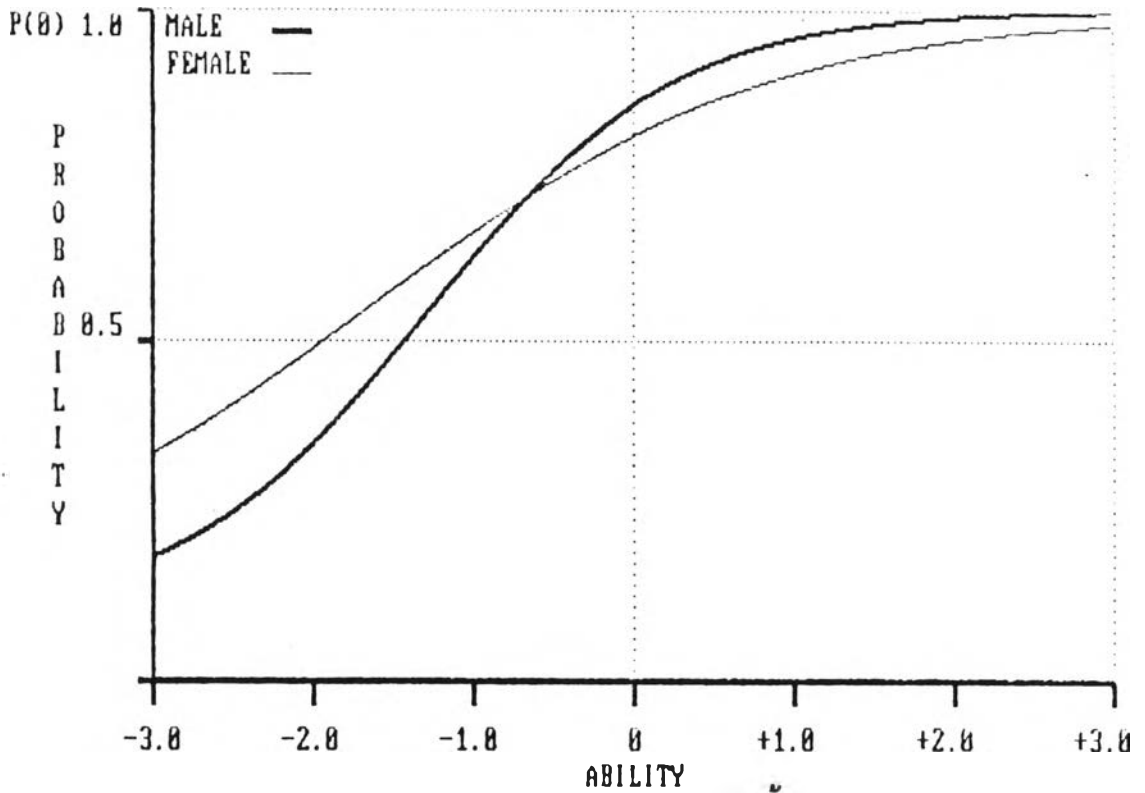


FIGURE 145 PLOT ITEM CHARACTERISTIC CURVE (ID 17)

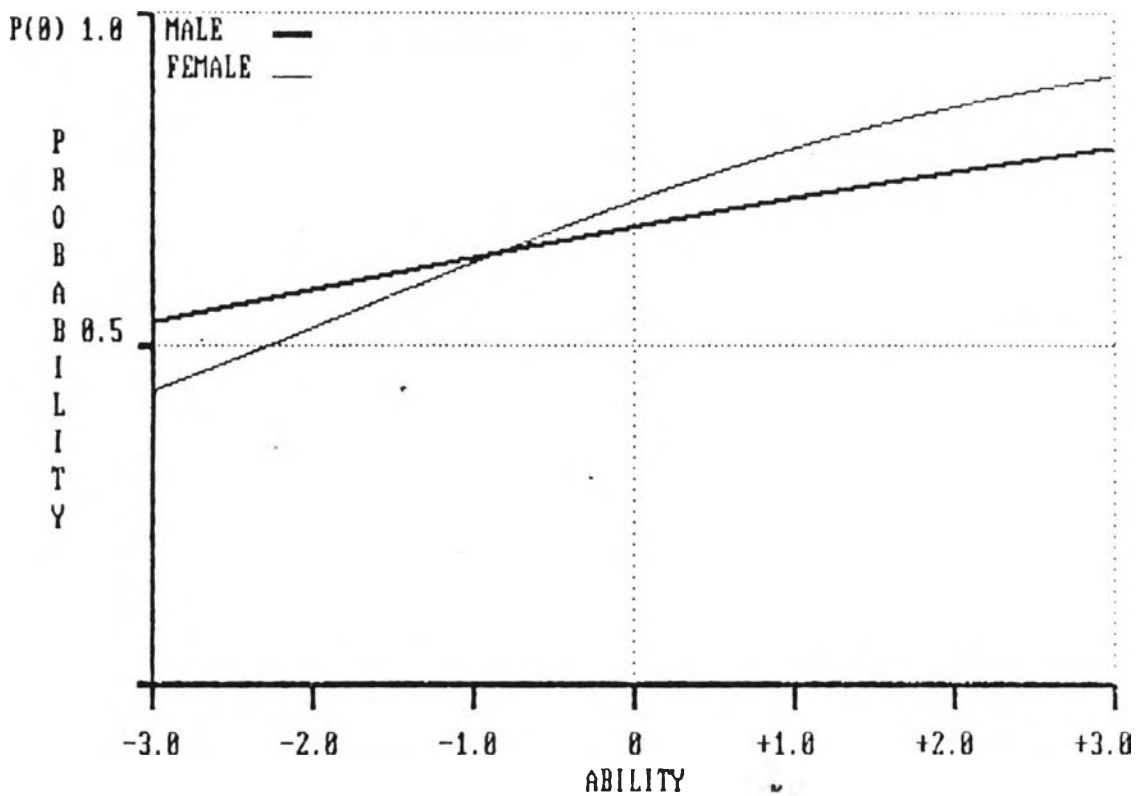


FIGURE 146 PLOT ITEM CHARACTERISTIC CURVE (ID 20)

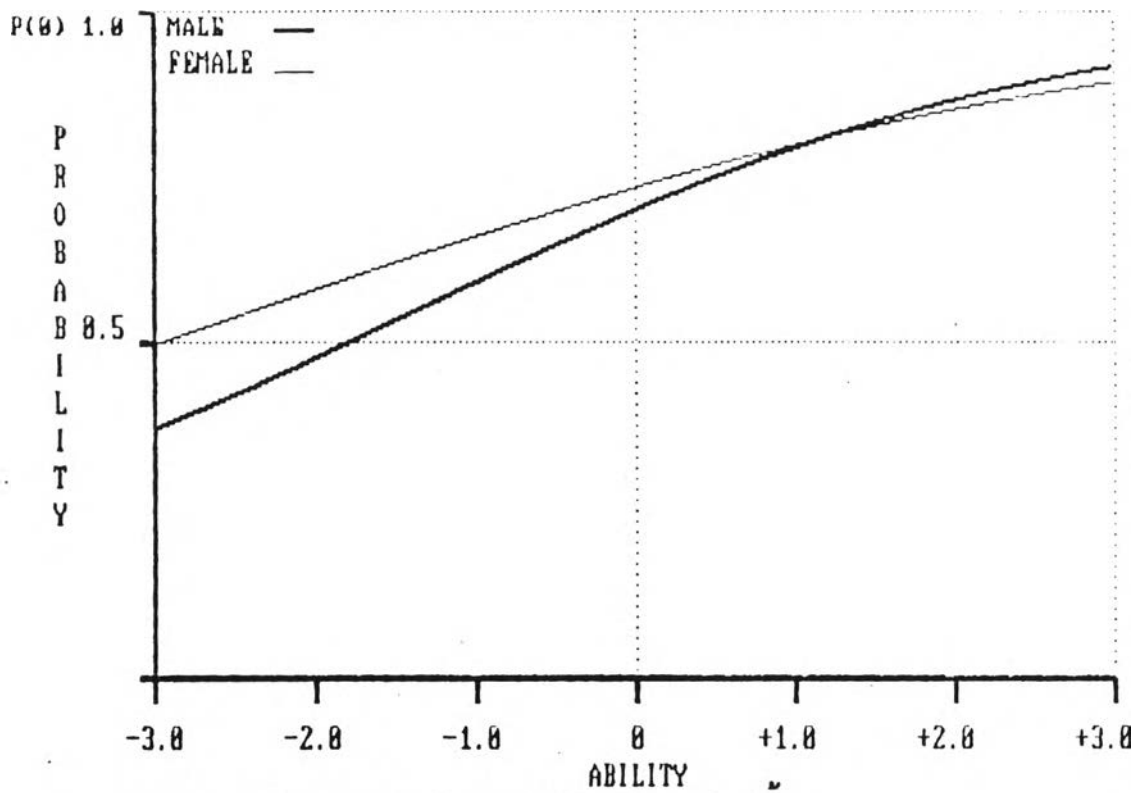


FIGURE 147 PLOT ITEM CHARACTERISTIC CURVE (ID 23)

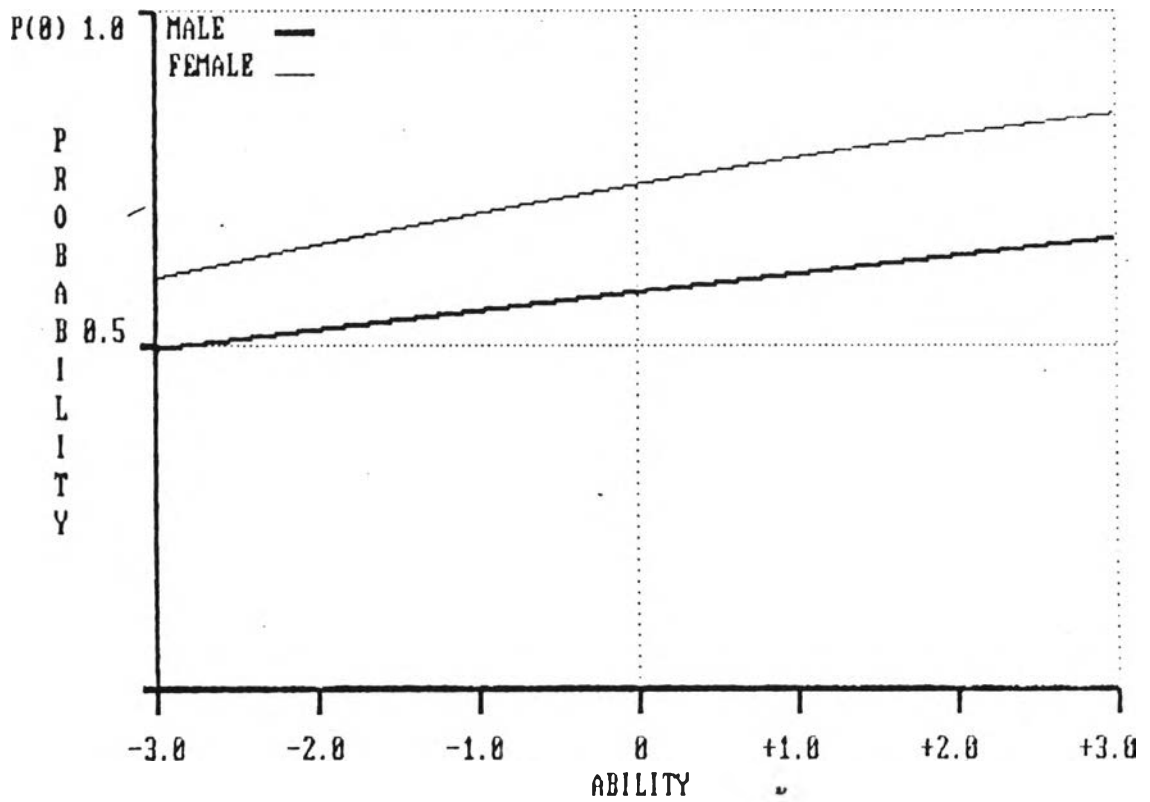


FIGURE 148 PLOT ITEM CHARACTERISTIC CURVE (ID 25)

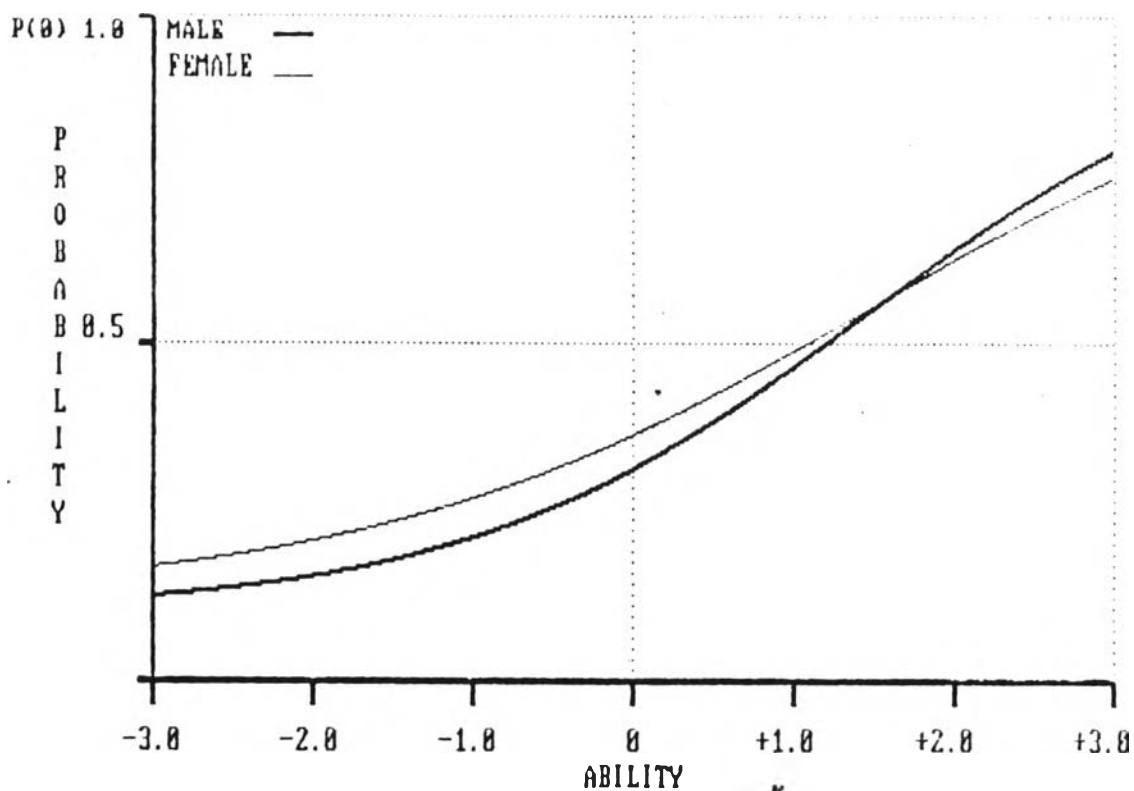


FIGURE 149 PLOT ITEM CHARACTERISTIC CURVE (ID 26)

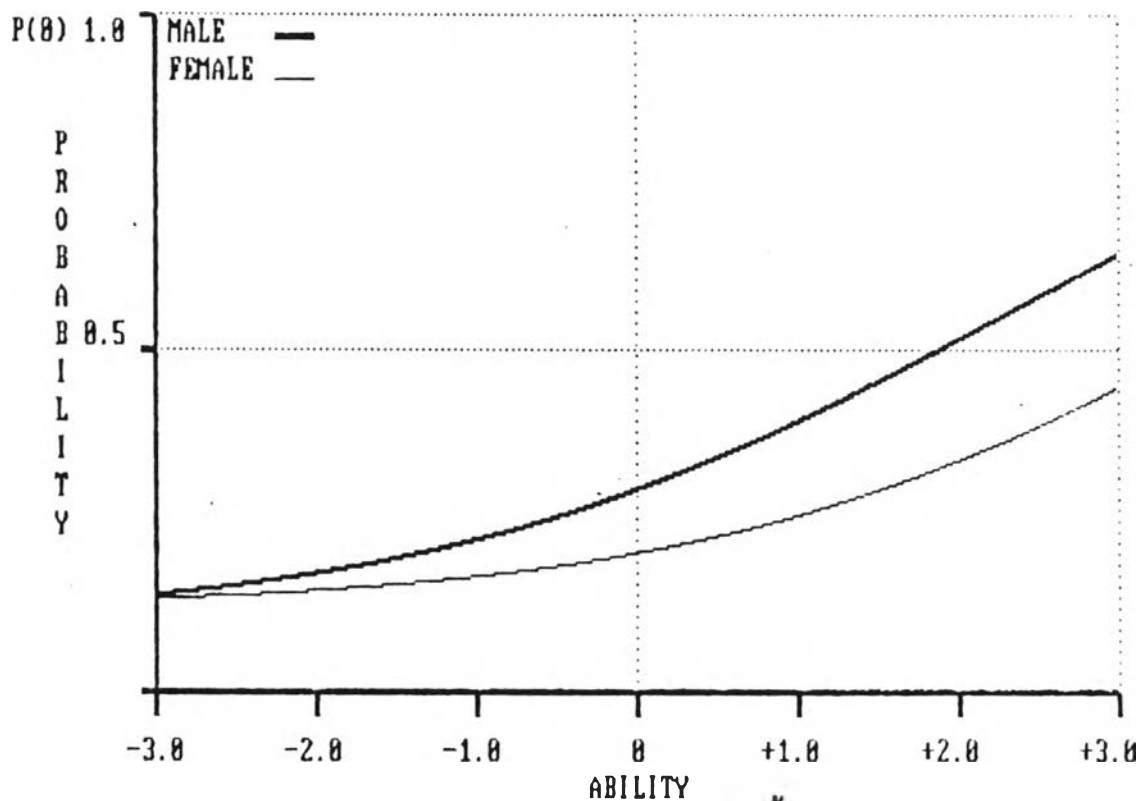


FIGURE 150 PLOT ITEM CHARACTERISTIC CURVE (ID 27)

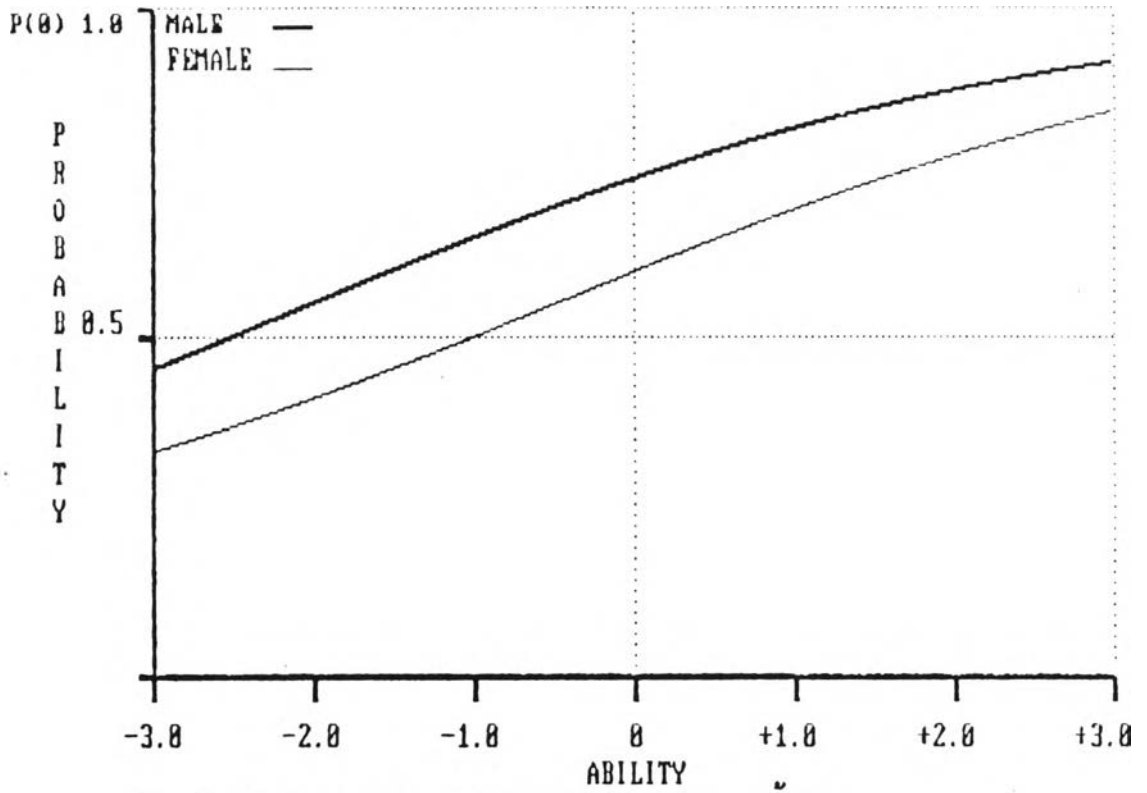


FIGURE 151 PLOT ITEM CHARACTERISTIC CURVE (ID 28)

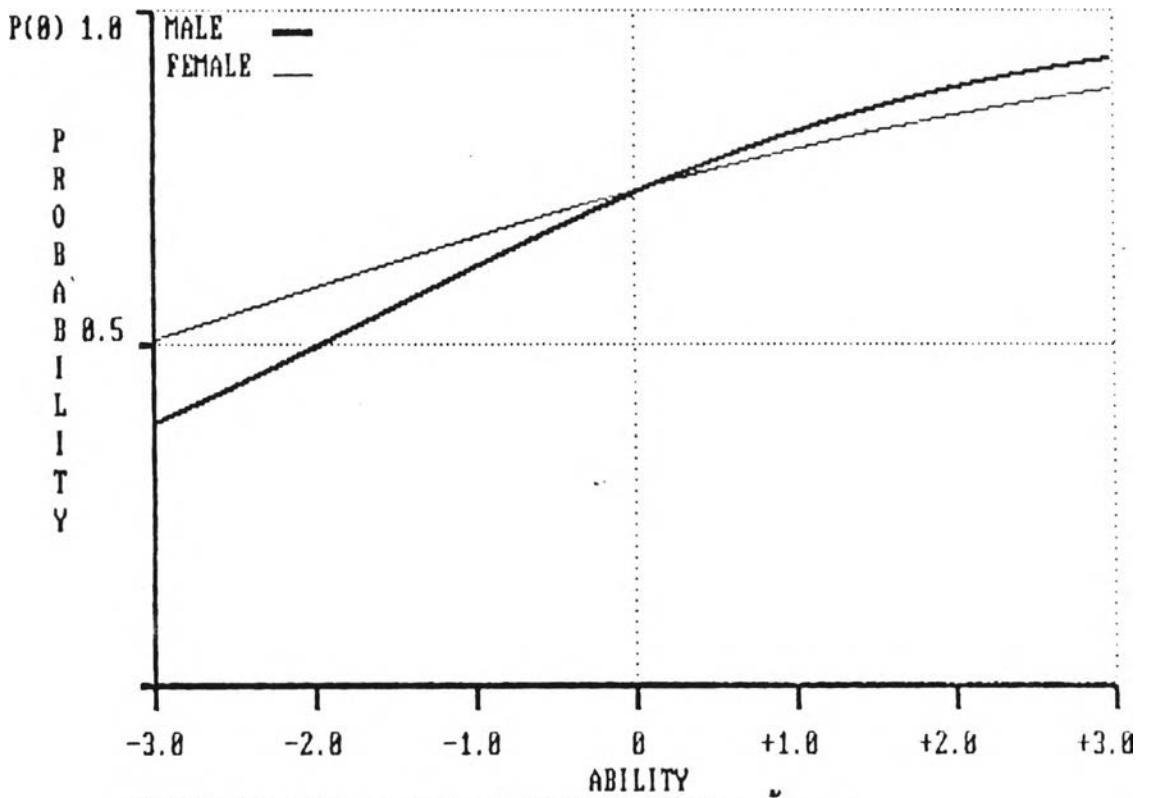


FIGURE 152 PLOT ITEM CHARACTERISTIC CURVE (ID 31)

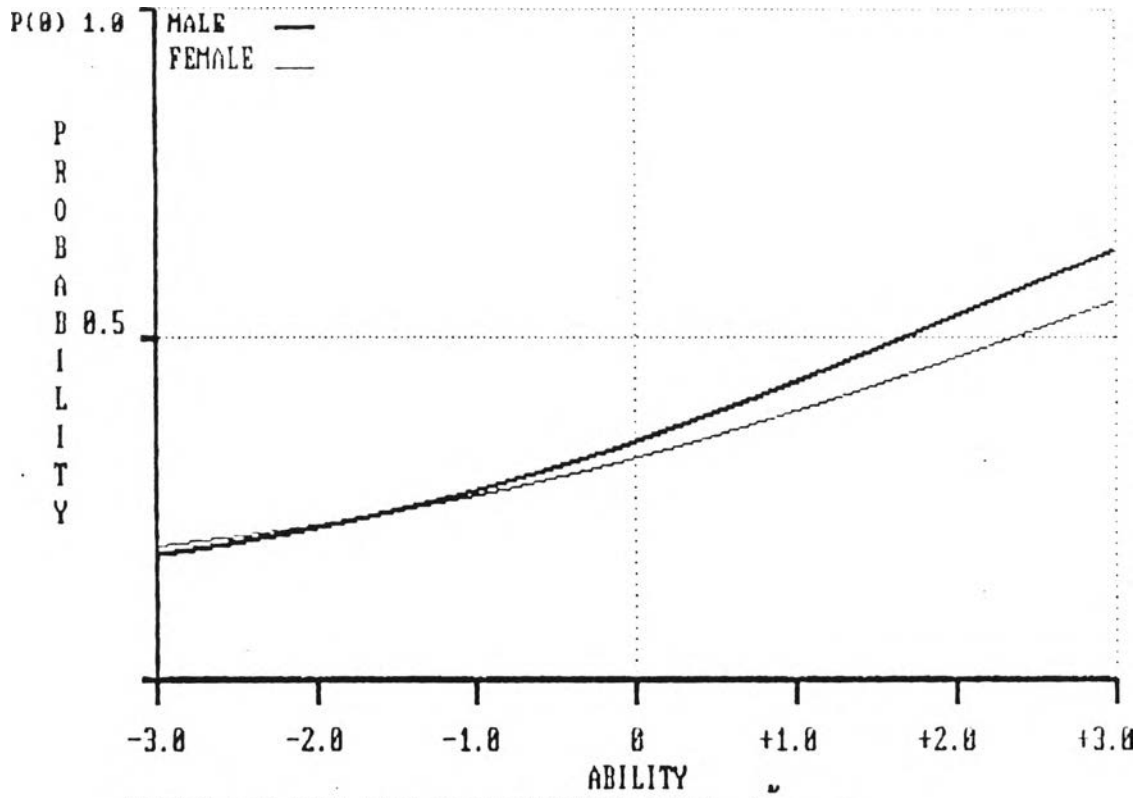


FIGURE 153 PLOT ITEM CHARACTERISTIC CURVE (ID 32)

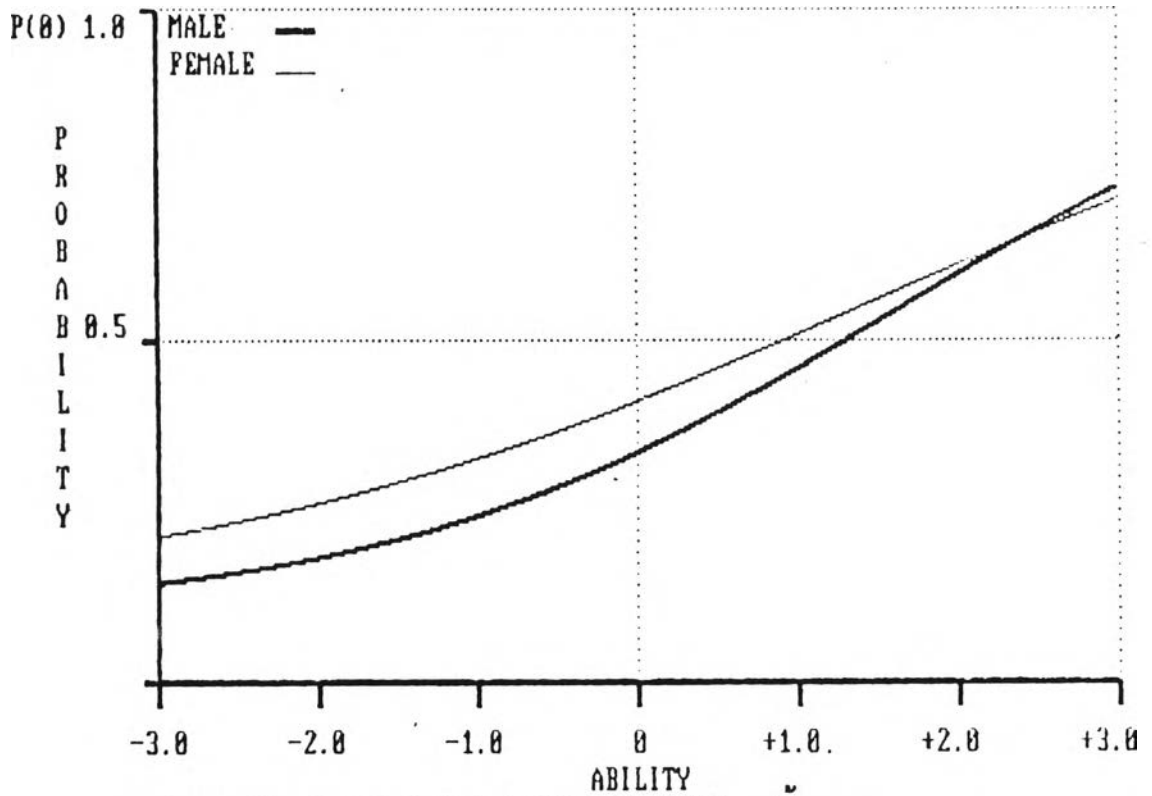


FIGURE 154 PLOT ITEM CHARACTERISTIC CURVE (ID 33)



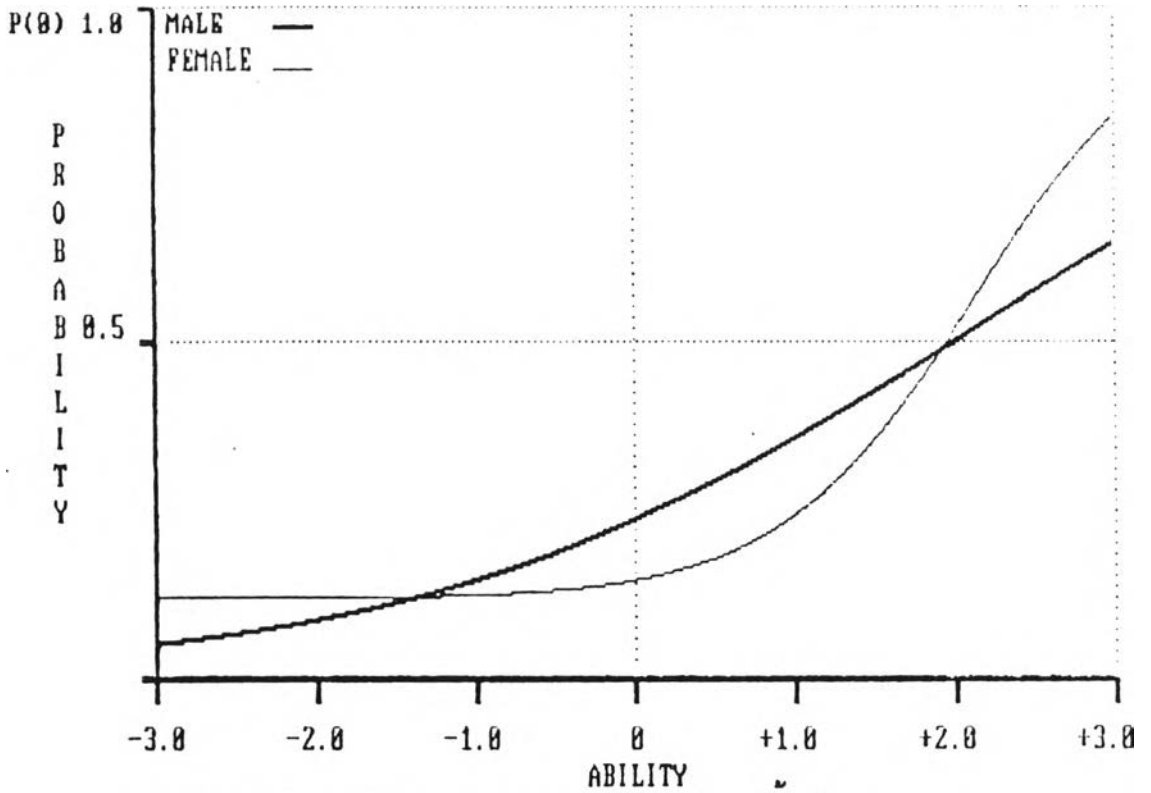


FIGURE 155 PLOT ITEM CHARACTERISTIC CURVE (ID 35)

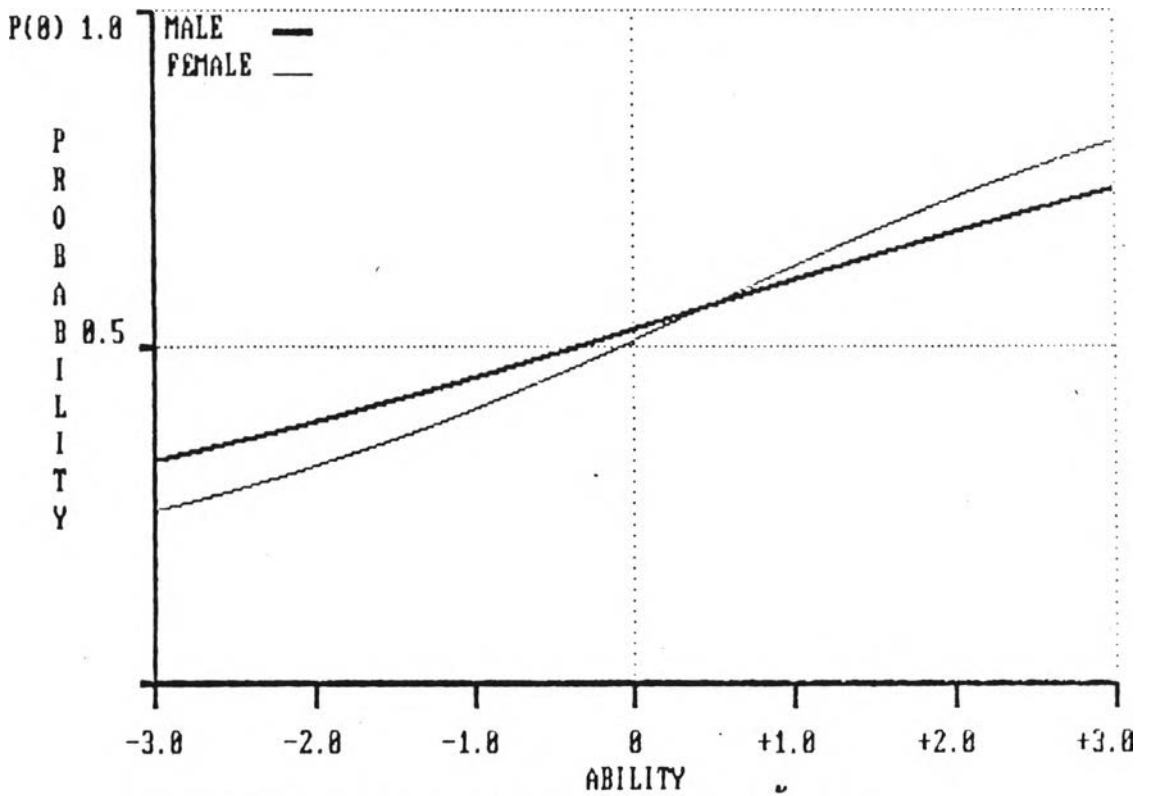


FIGURE 156 PLOT ITEM CHARACTERISTIC CURVE (ID 37)

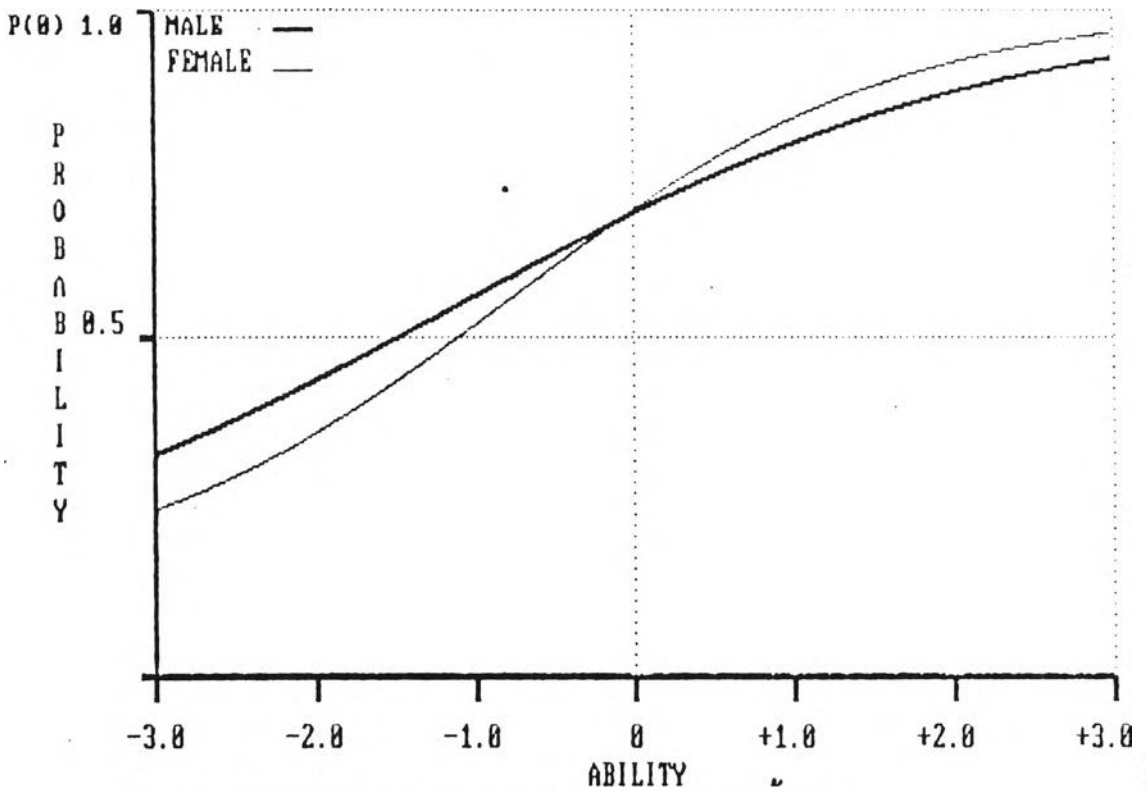


FIGURE 157 PLOT ITEM CHARACTERISTIC CURVE (no 39)

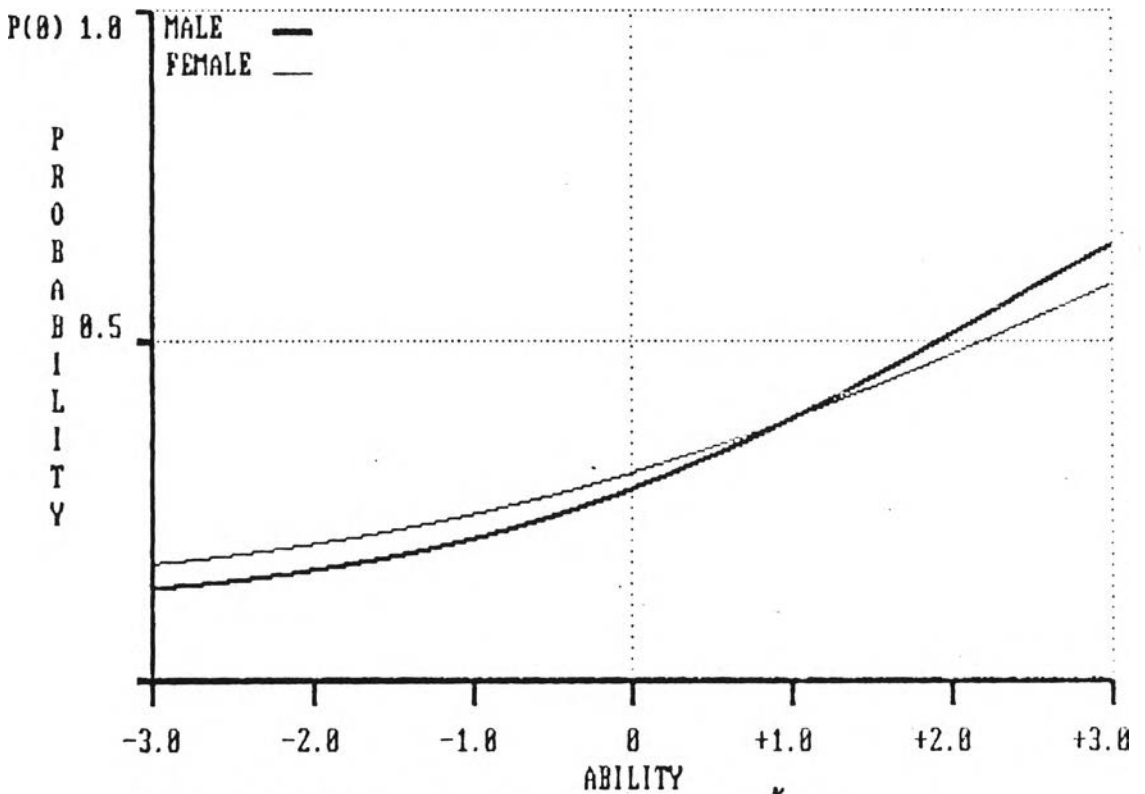


FIGURE 158 PLOT ITEM CHARACTERISTIC CURVE (no 42)

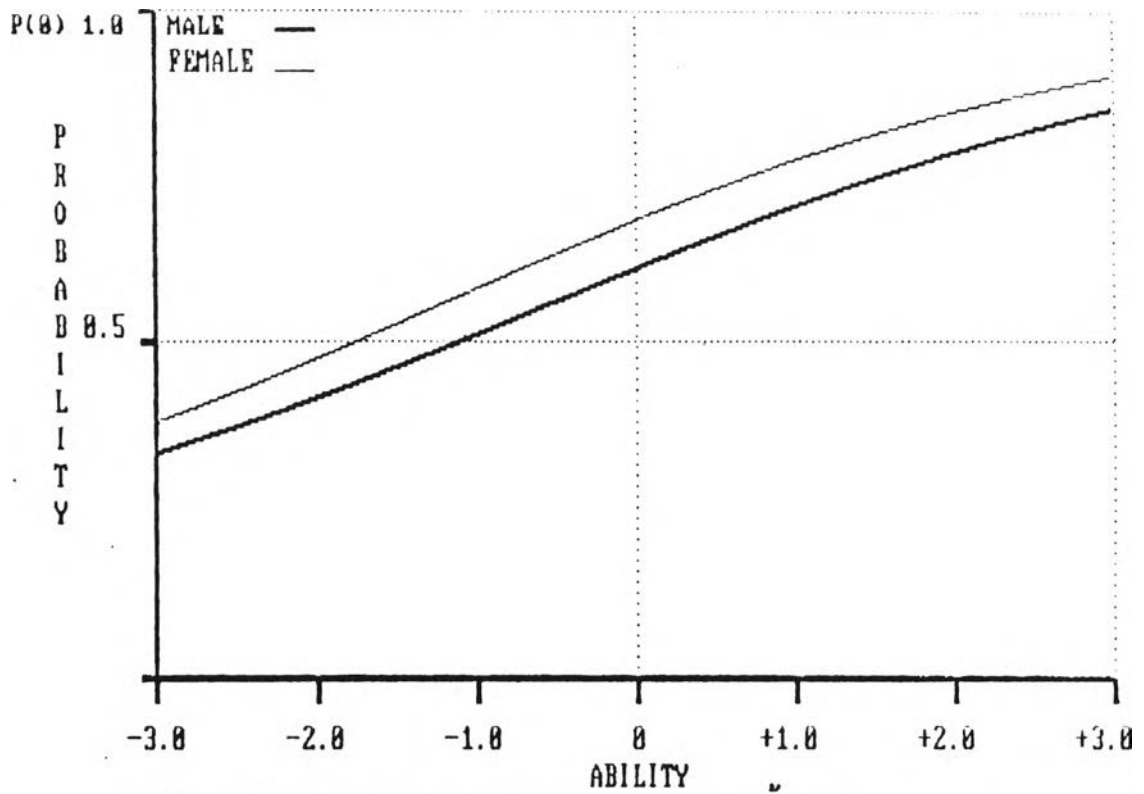


FIGURE 159 PLOT ITEM CHARACTERISTIC CURVE (no 43)

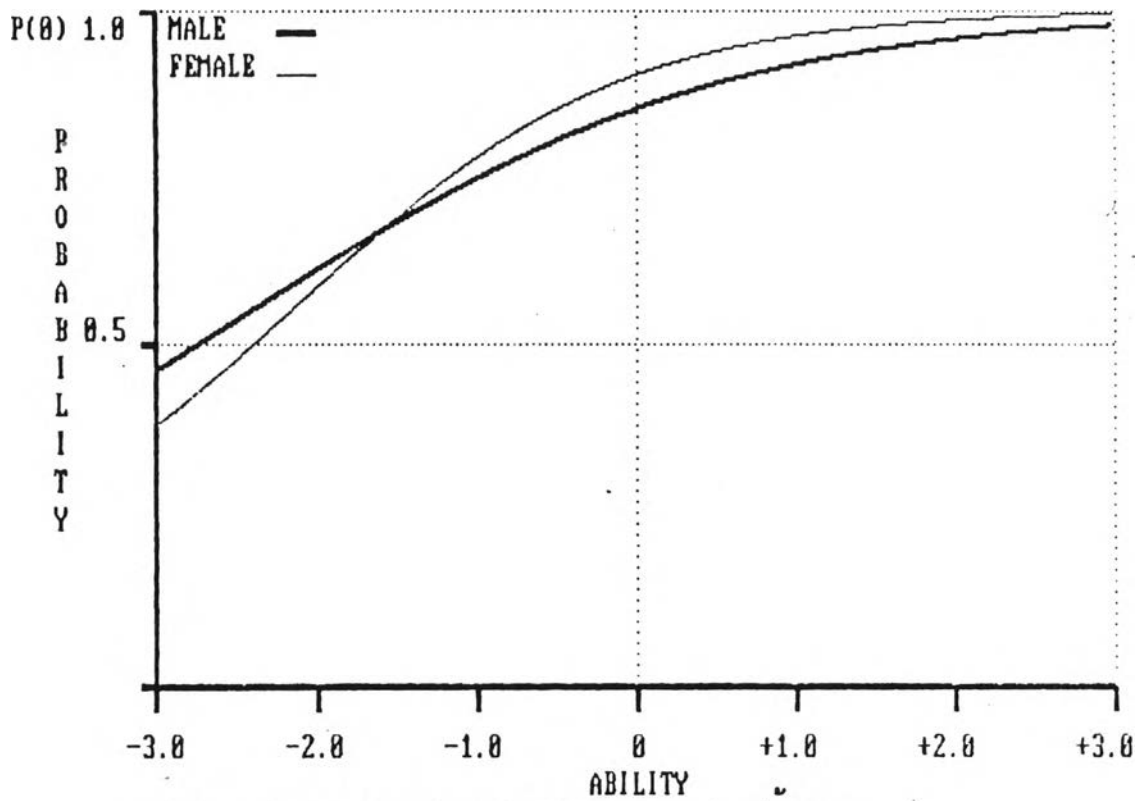


FIGURE 160 PLOT ITEM CHARACTERISTIC CURVE (no 44)

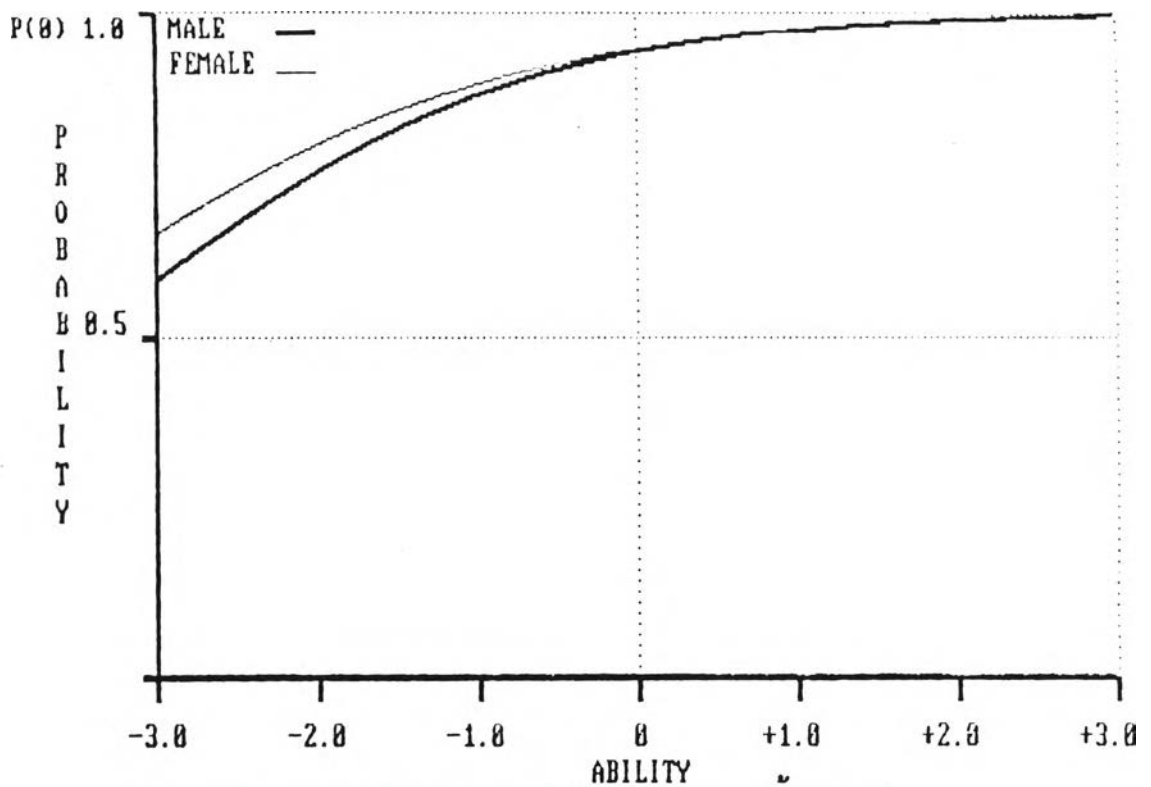


FIGURE 161 PLOT ITEM CHARACTERISTIC CURVE (v045)

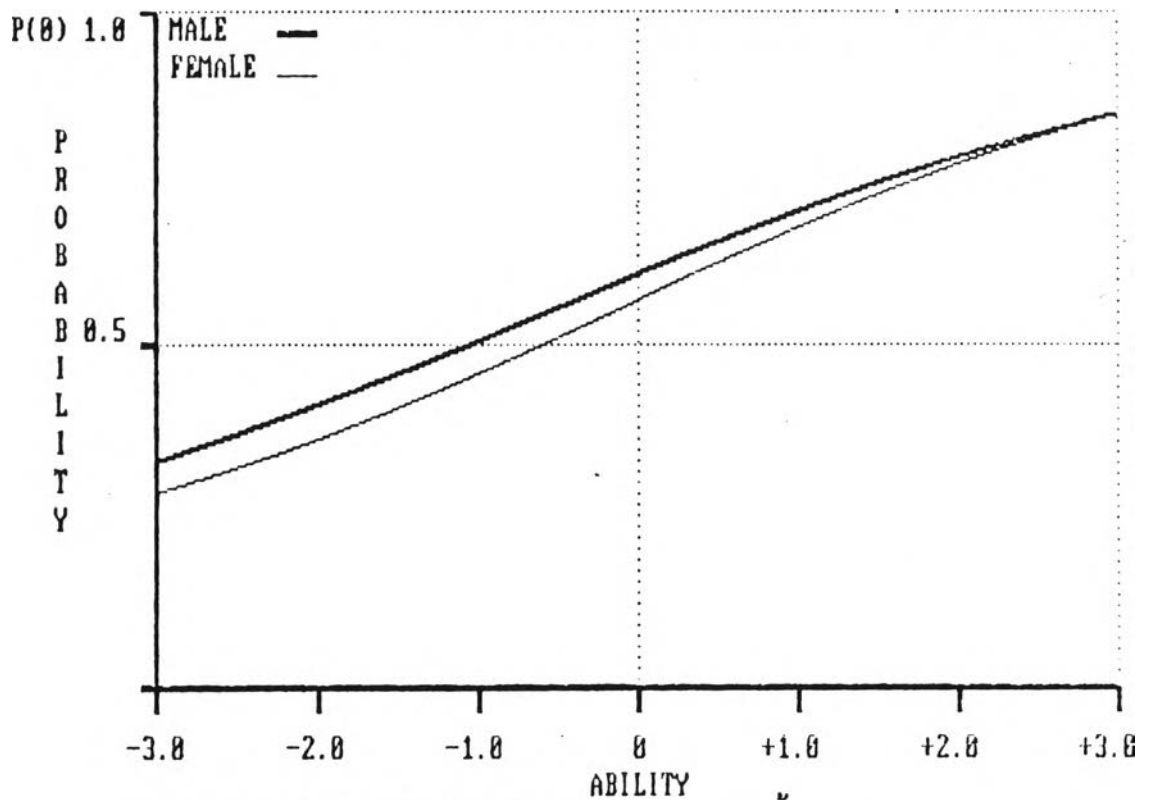


FIGURE 162 PLOT ITEM CHARACTERISTIC CURVE (v046)

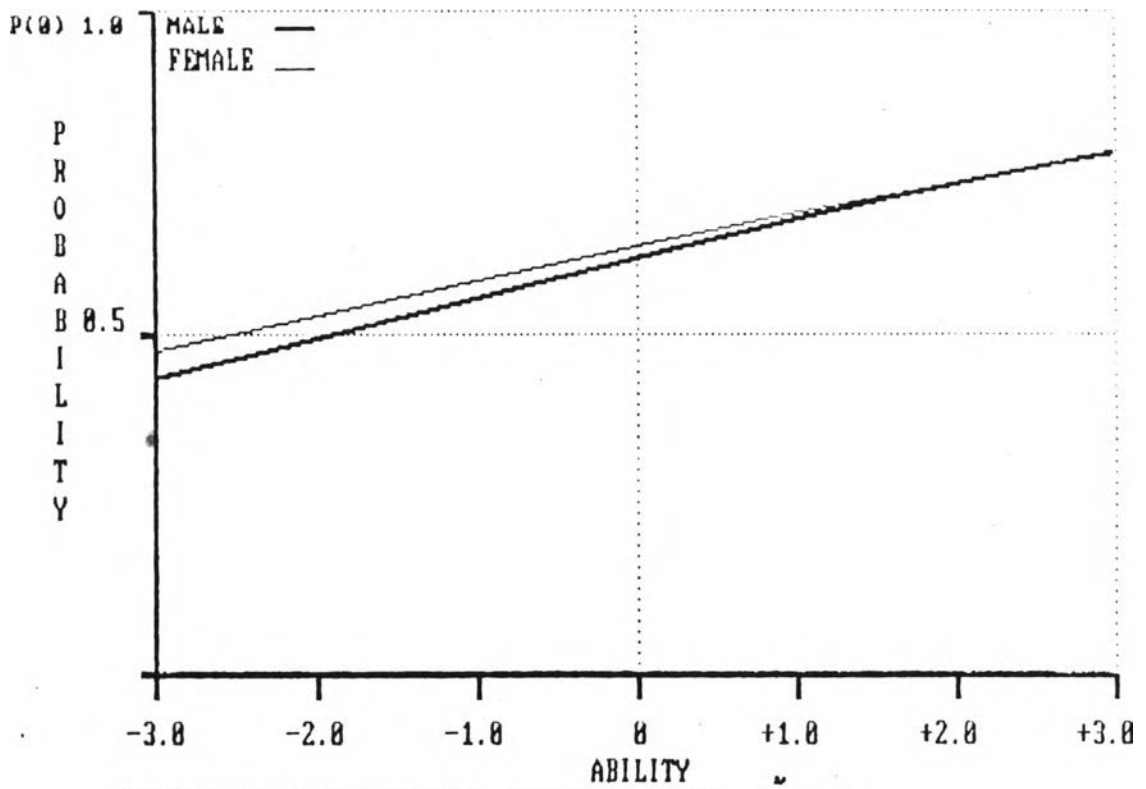


FIGURE 163 PLOT ITEM CHARACTERISTIC CURVE (no 47)

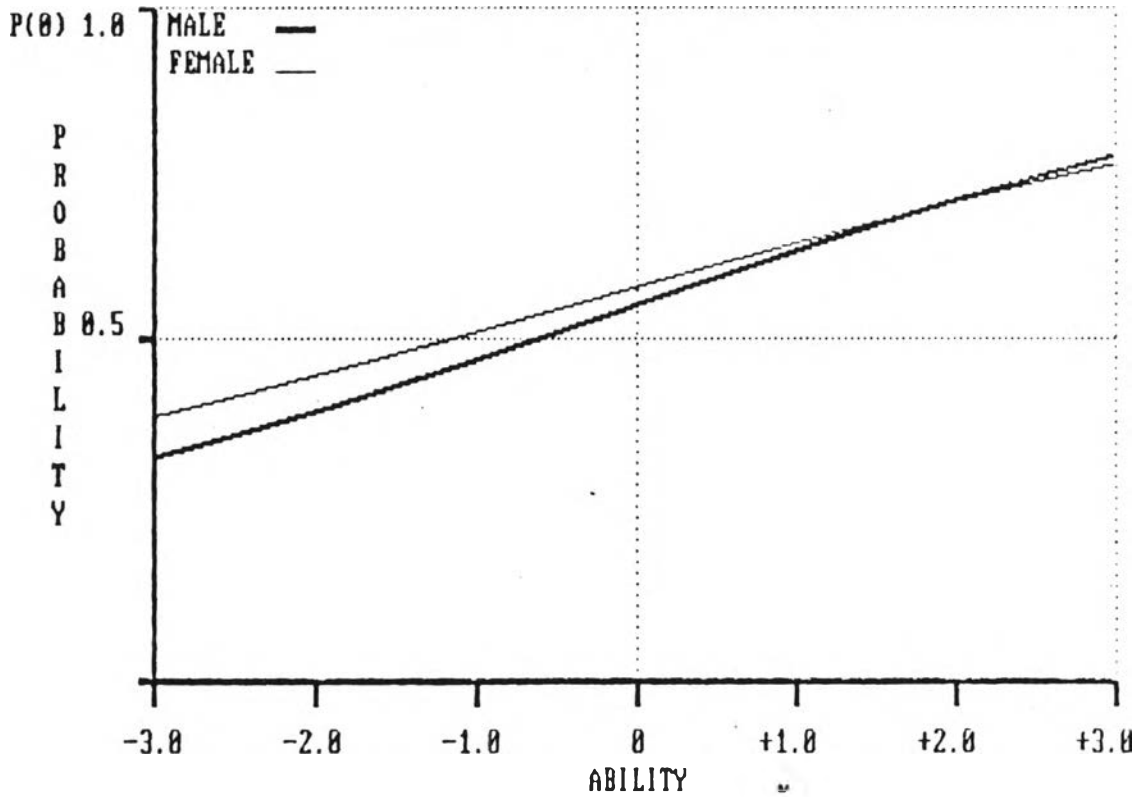


FIGURE 164 PLOT ITEM CHARACTERISTIC CURVE (no 48)

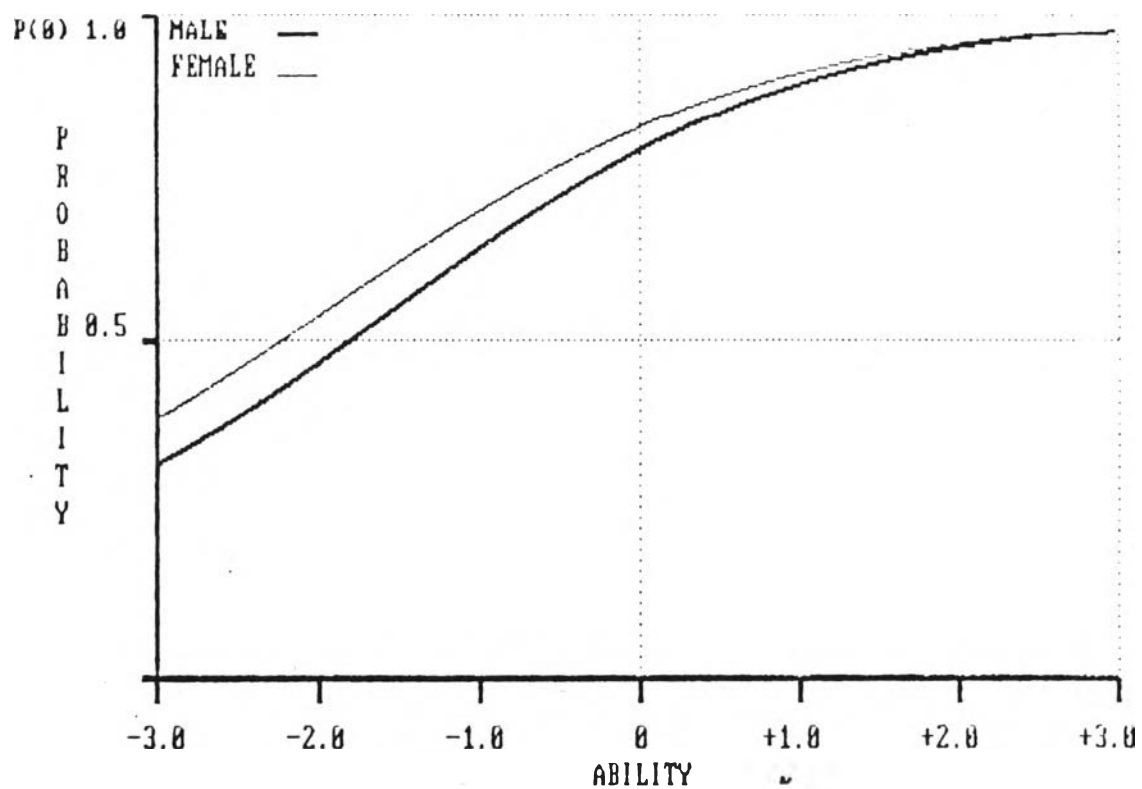


FIGURE 165 PLOT ITEM CHARACTERISTIC CURVE (ID 49)

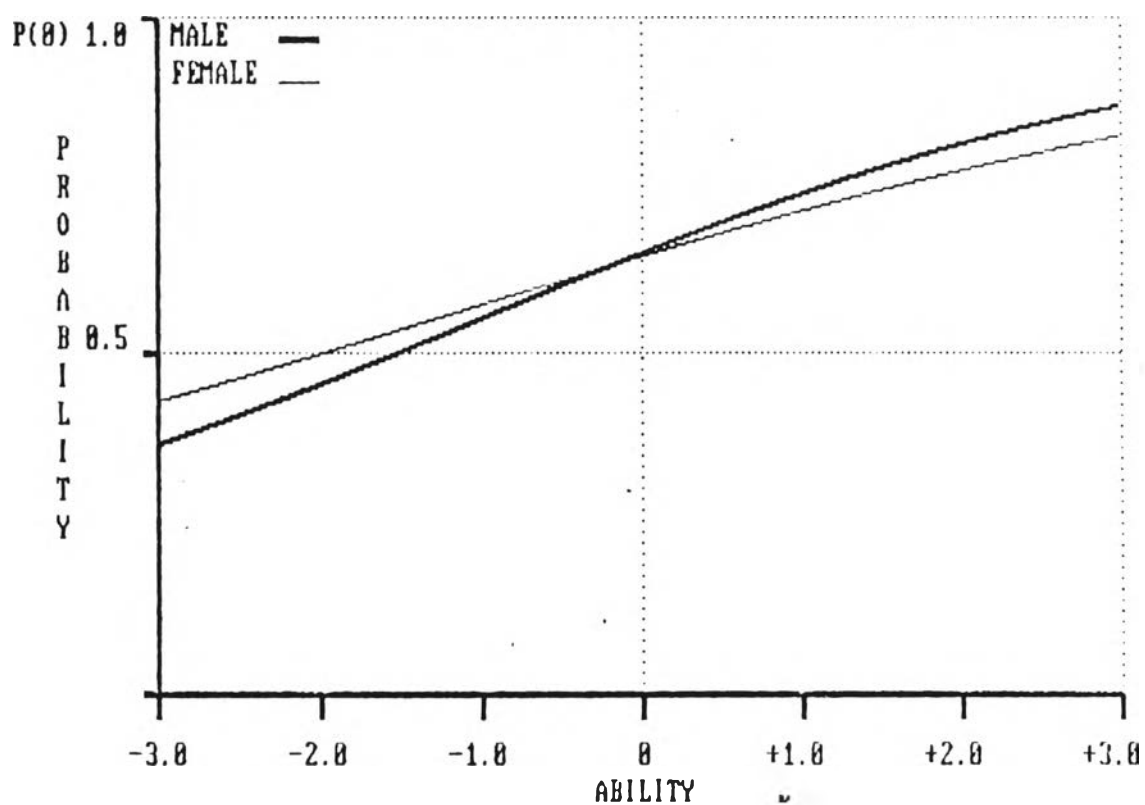


FIGURE 166 PLOT ITEM CHARACTERISTIC CURVE (ID 50)

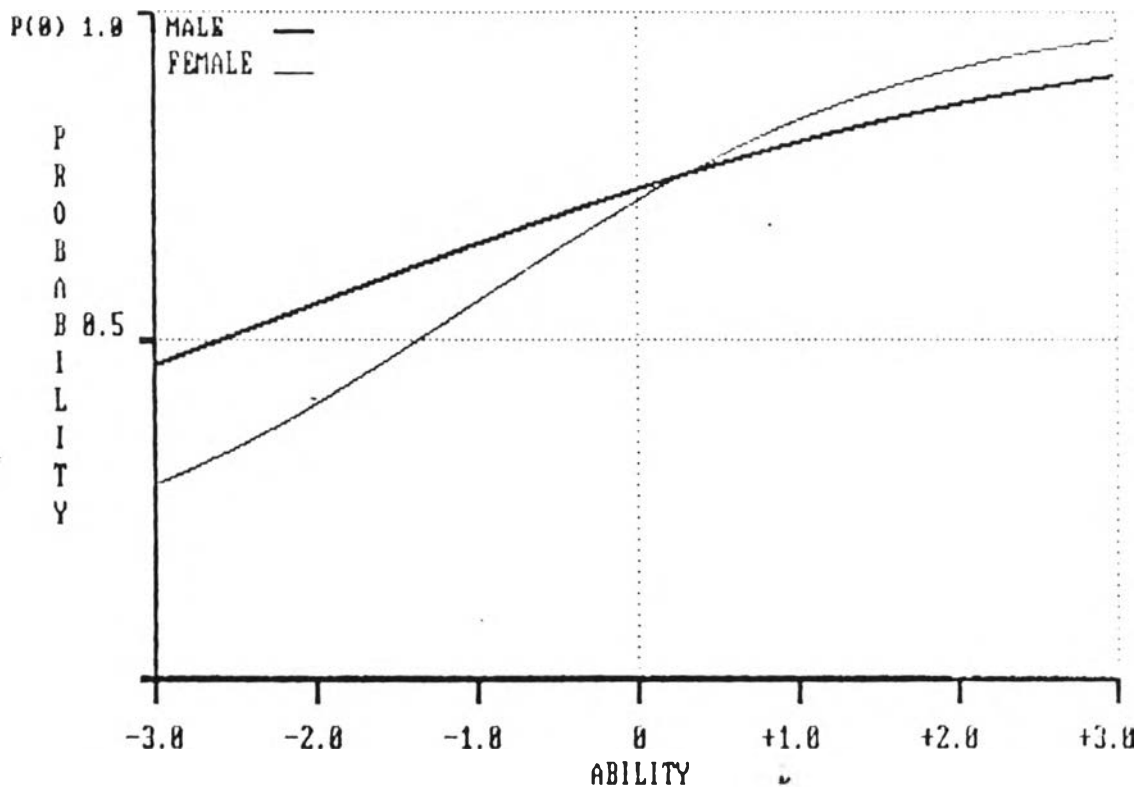


FIGURE 167 PLOT ITEM CHARACTERISTIC CURVE (no 52)

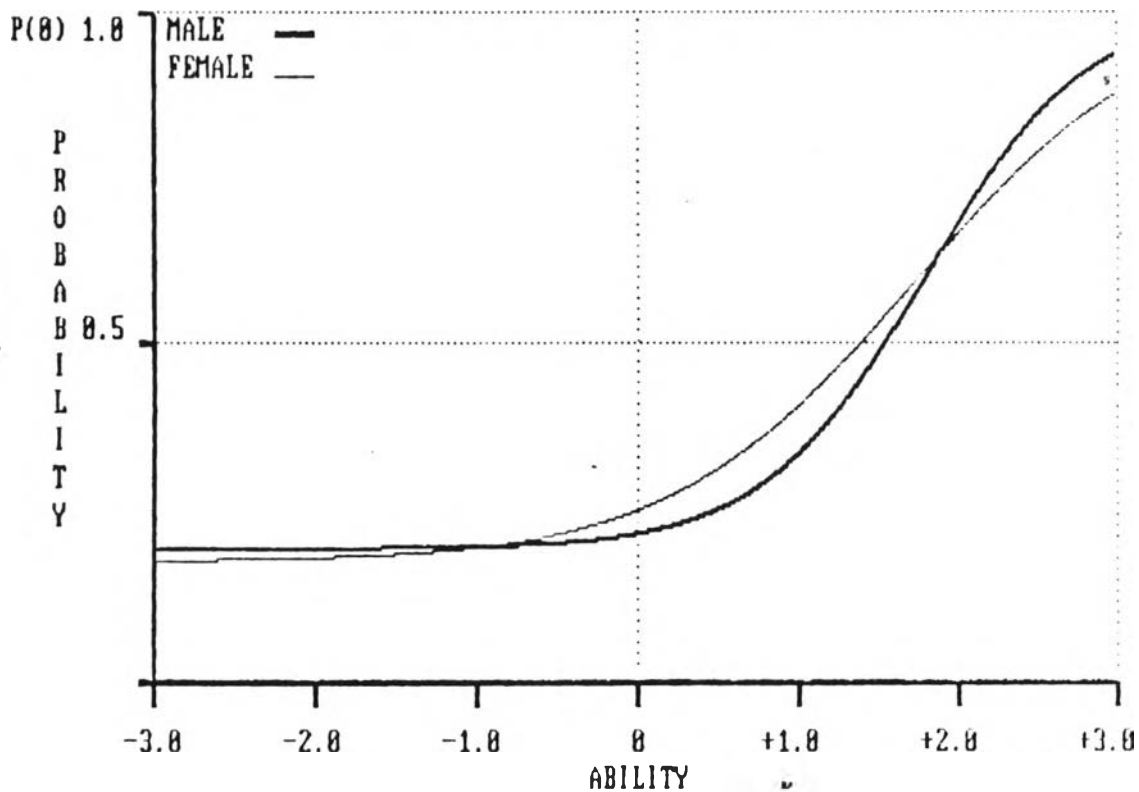


FIGURE 168 PLOT ITEM CHARACTERISTIC CURVE (no 53)

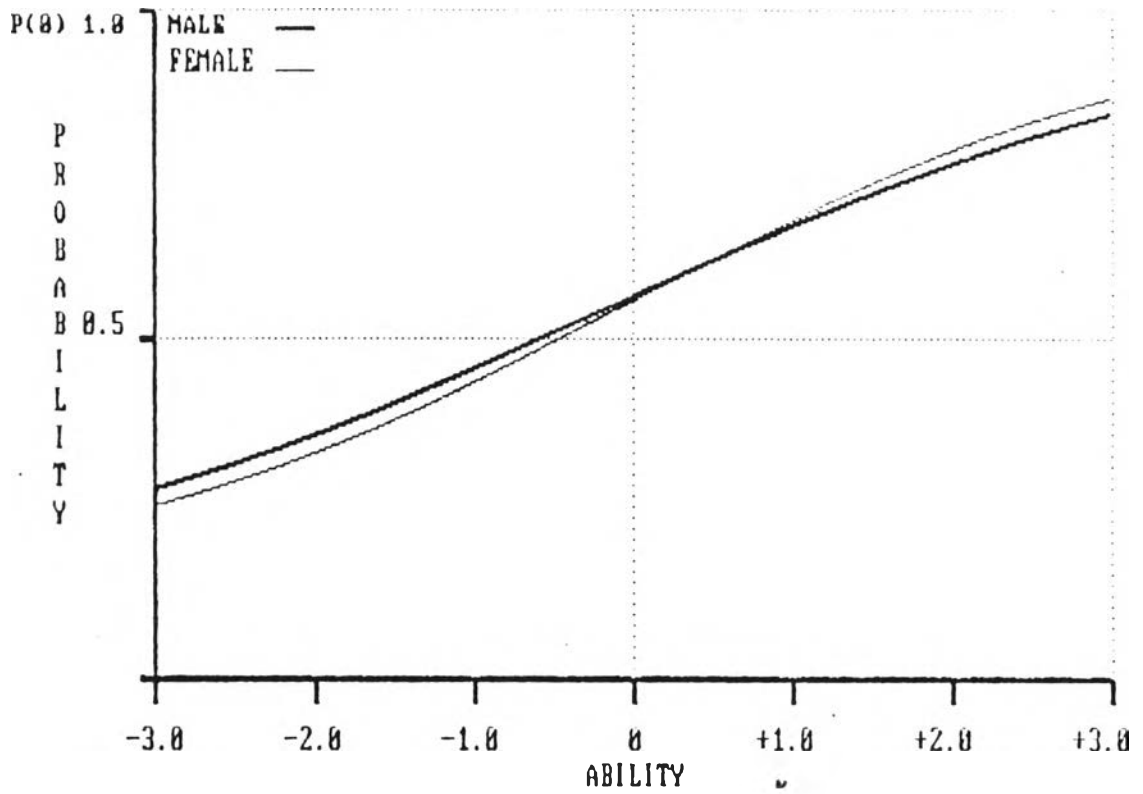


FIGURE 169 PLOT ITEM CHARACTERISTIC CURVE (no 54)

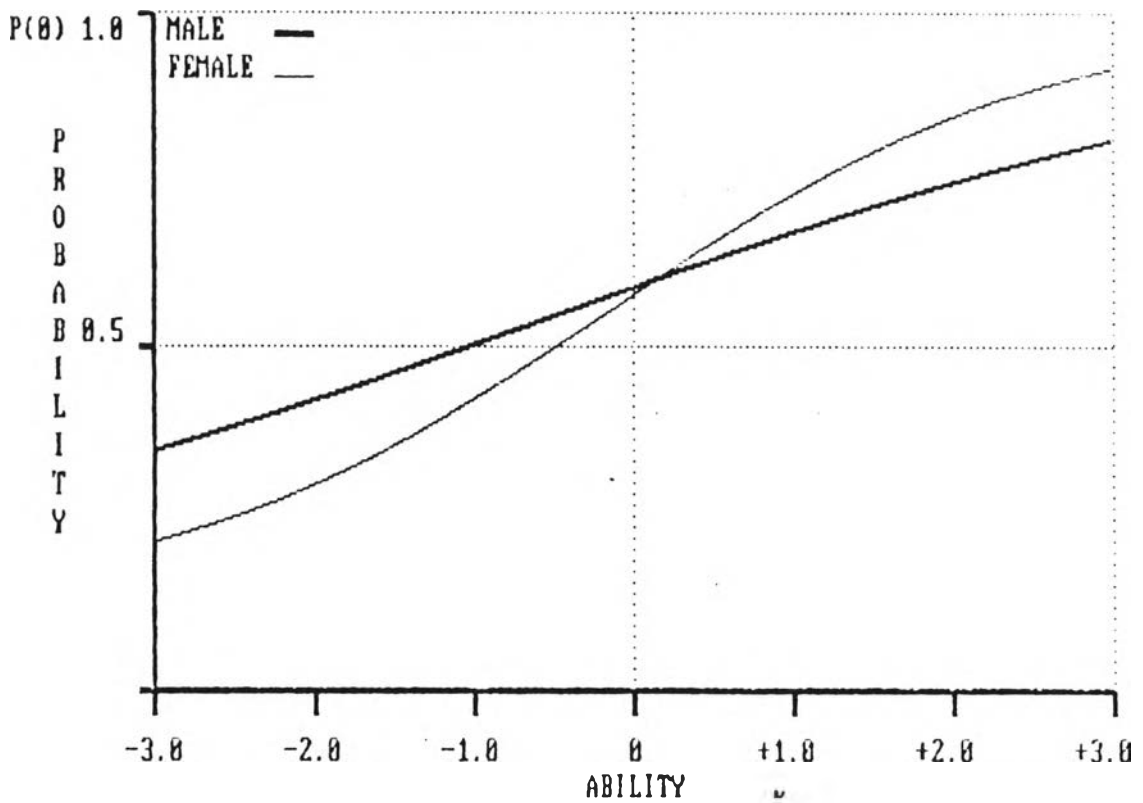


FIGURE 170 PLOT ITEM CHARACTERISTIC CURVE (no 55)



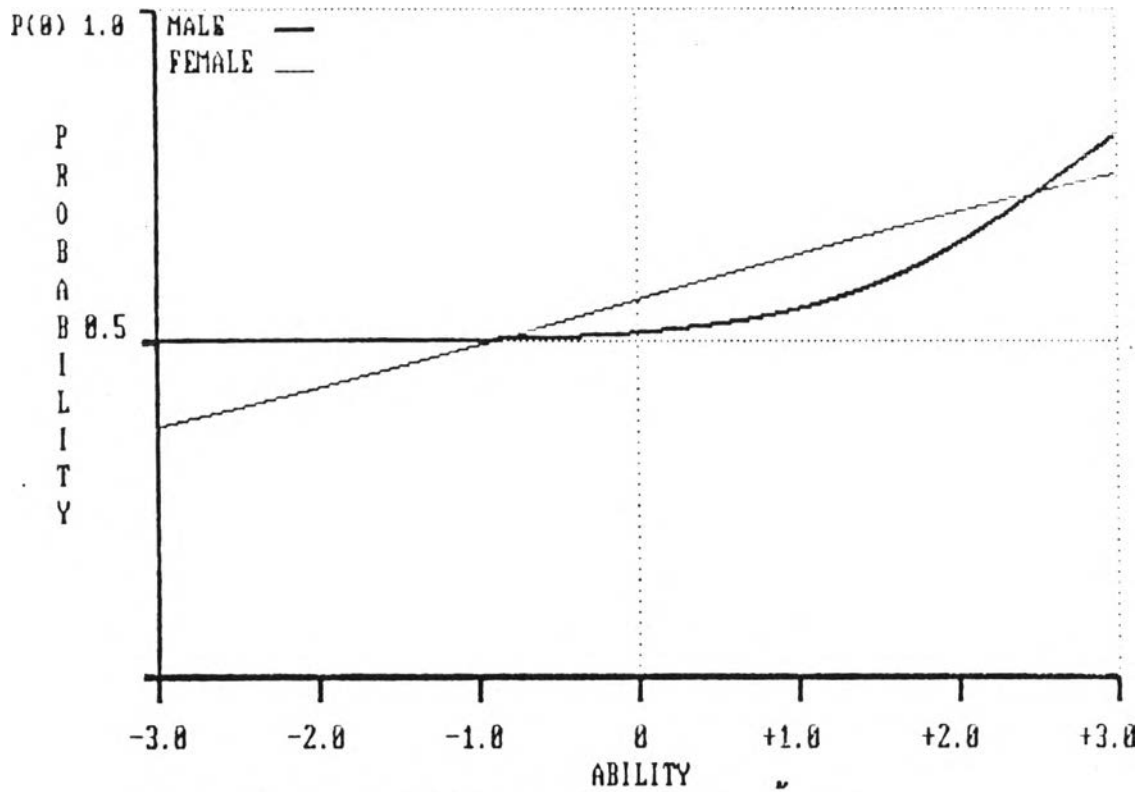


FIGURE 171 PLOT ITEM CHARACTERISTIC CURVE (ID 57)

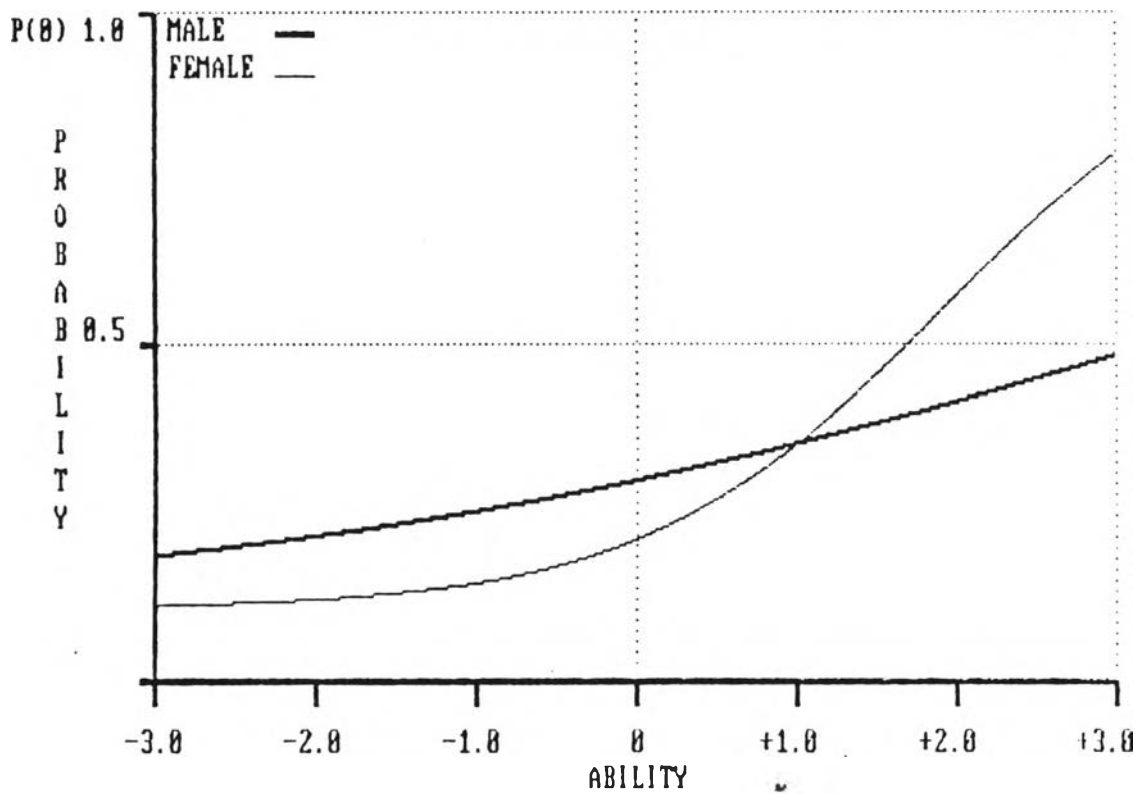


FIGURE 172 PLOT ITEM CHARACTERISTIC CURVE (ID 58)

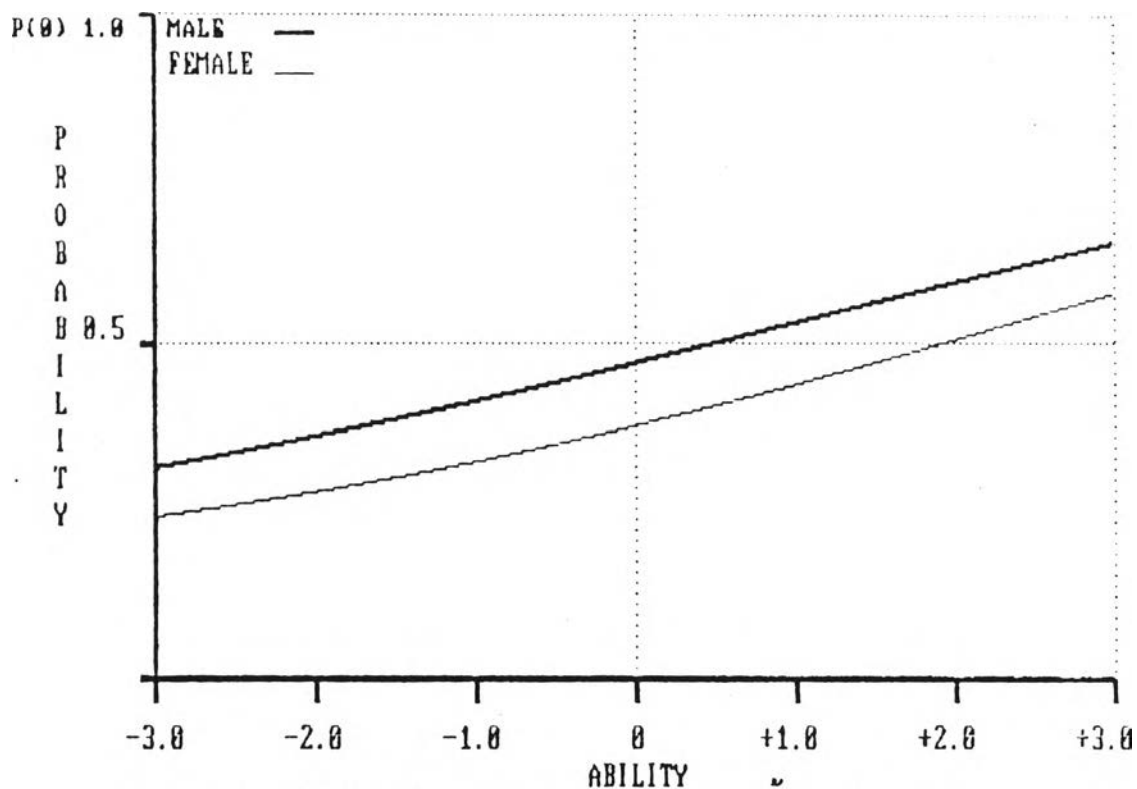


FIGURE 173 PLOT ITEM CHARACTERISTIC CURVE (ID 62)

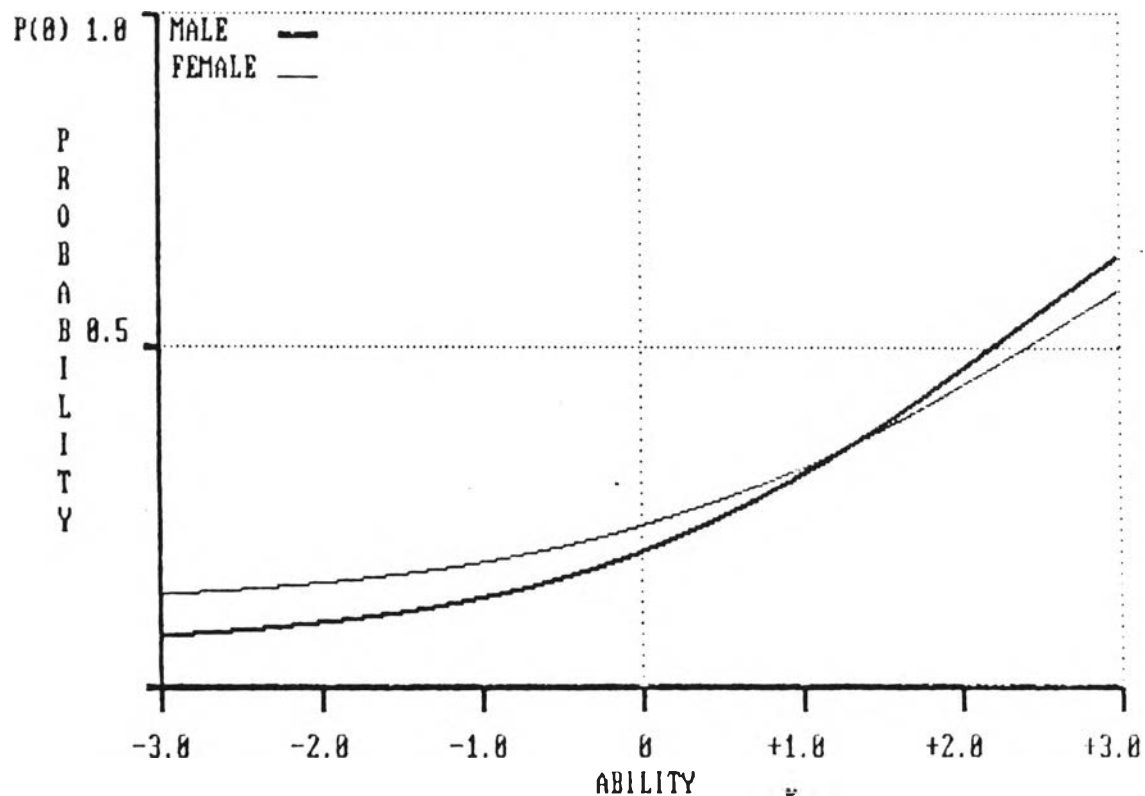


FIGURE 174 PLOT ITEM CHARACTERISTIC CURVE (ID 63)

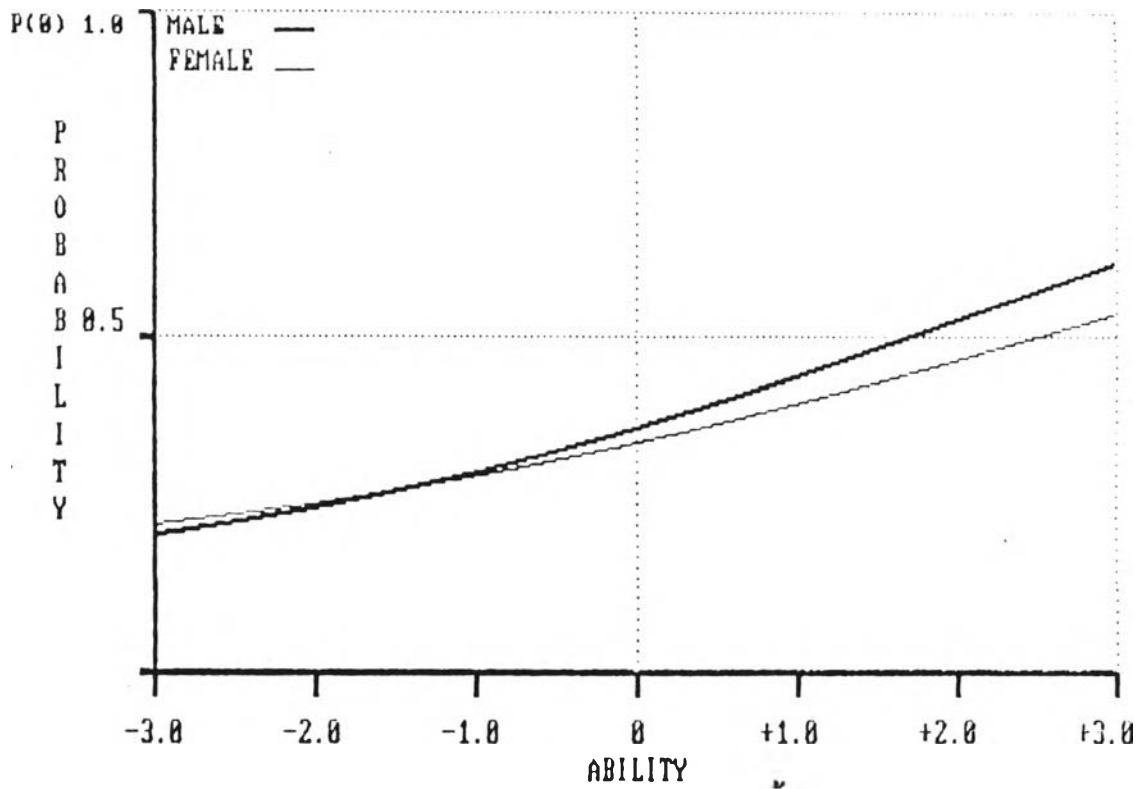


FIGURE 175 PLOT ITEM CHARACTERISTIC CURVE (v064)

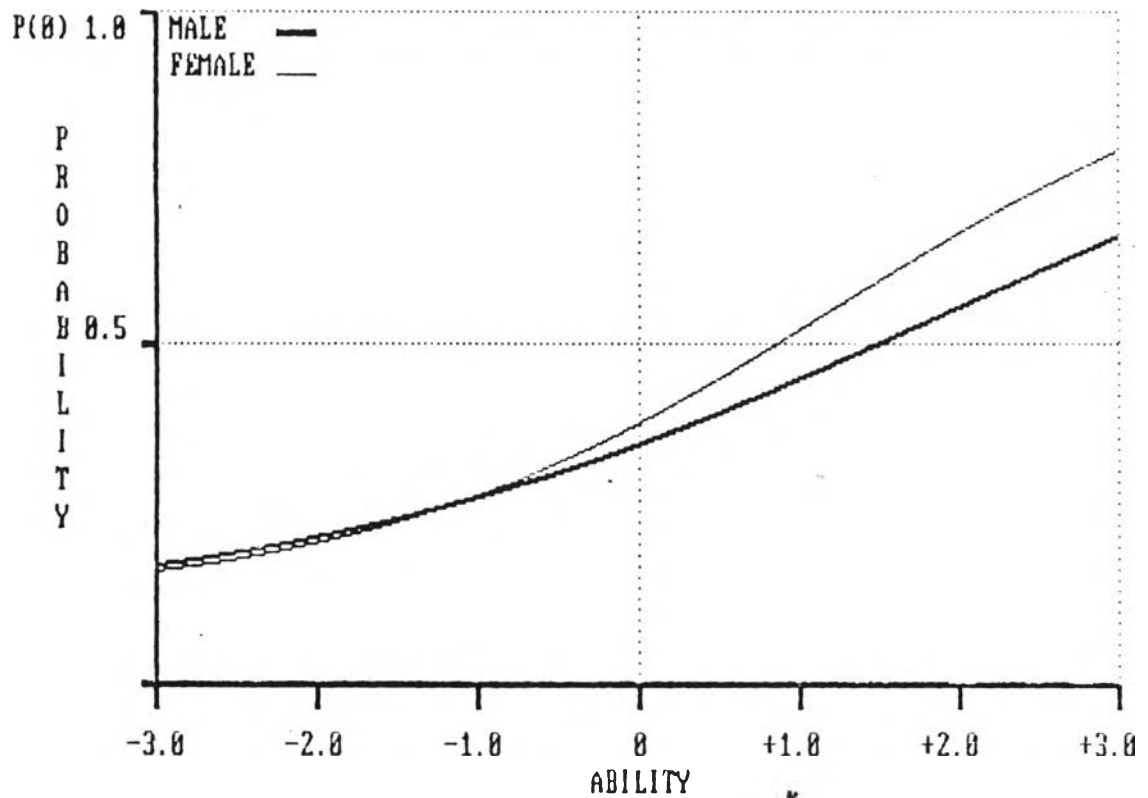


FIGURE 176 PLOT ITEM CHARACTERISTIC CURVE (v065)

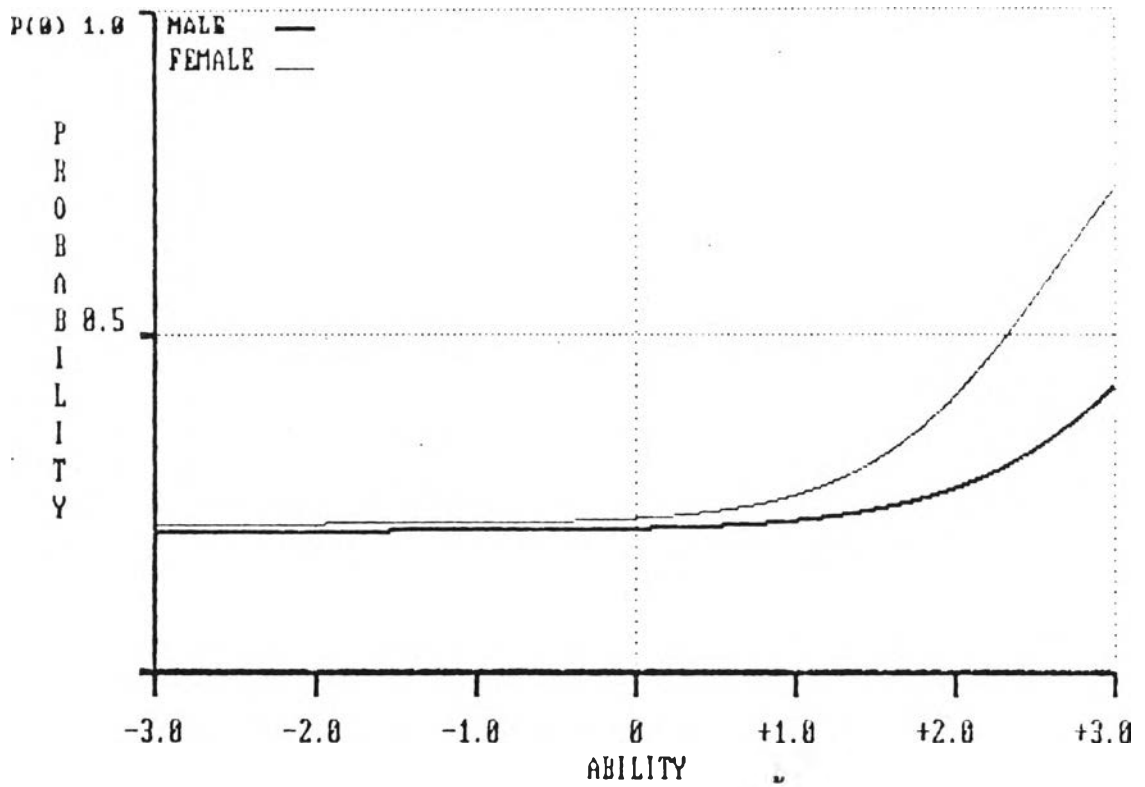


FIGURE 177 PLOT ITEM CHARACTERISTIC CURVE (8067)

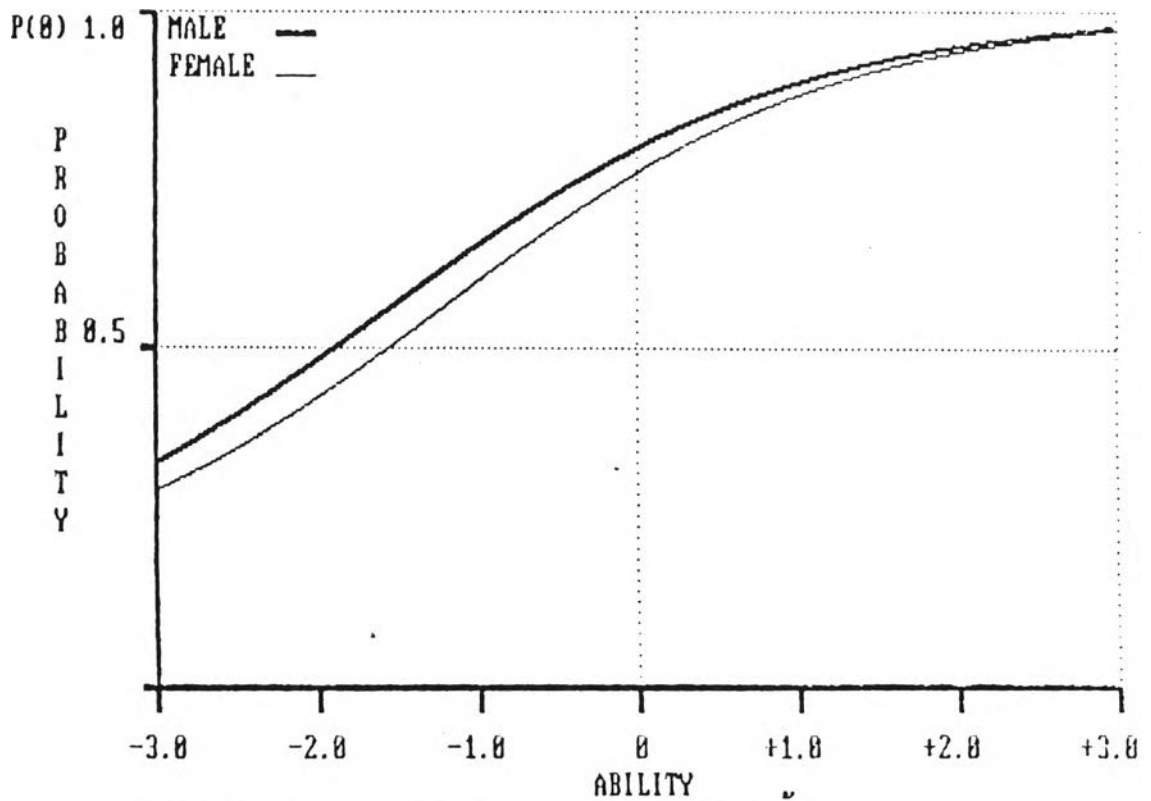


FIGURE 178 PLOT ITEM CHARACTERISTIC CURVE (8069)

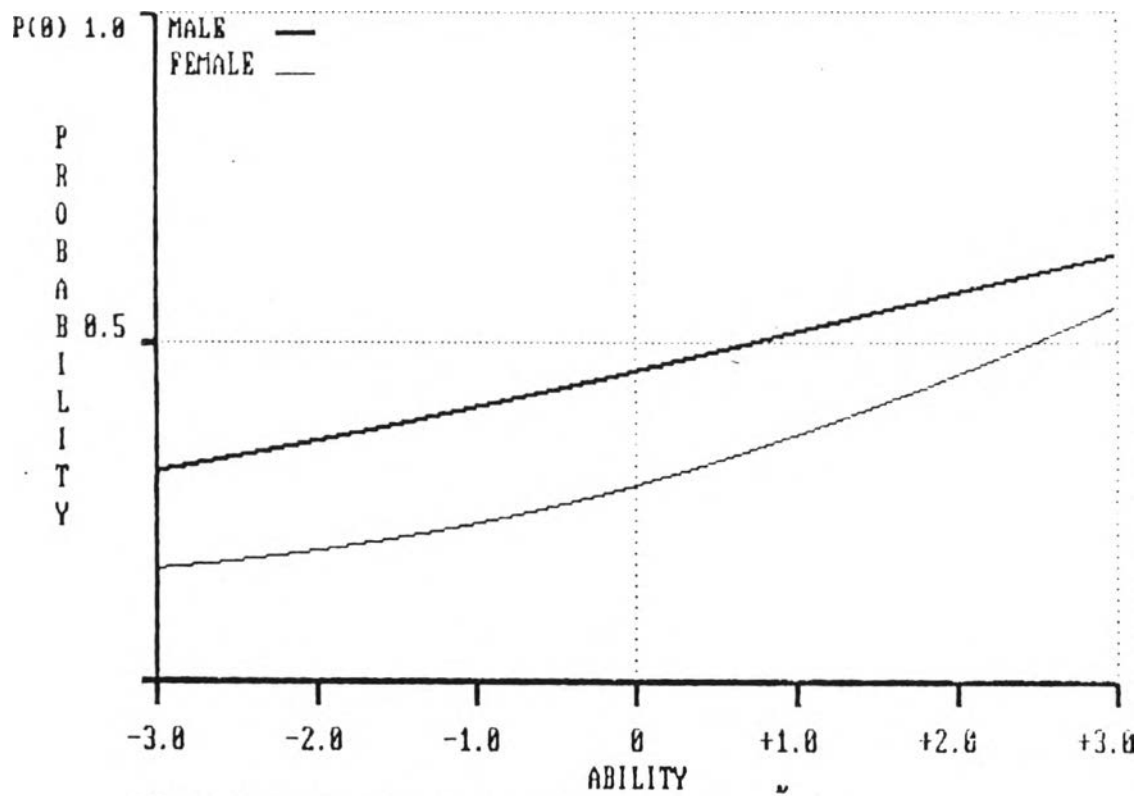


FIGURE 179 PLOT ITEM CHARACTERISTIC CURVE (v070)

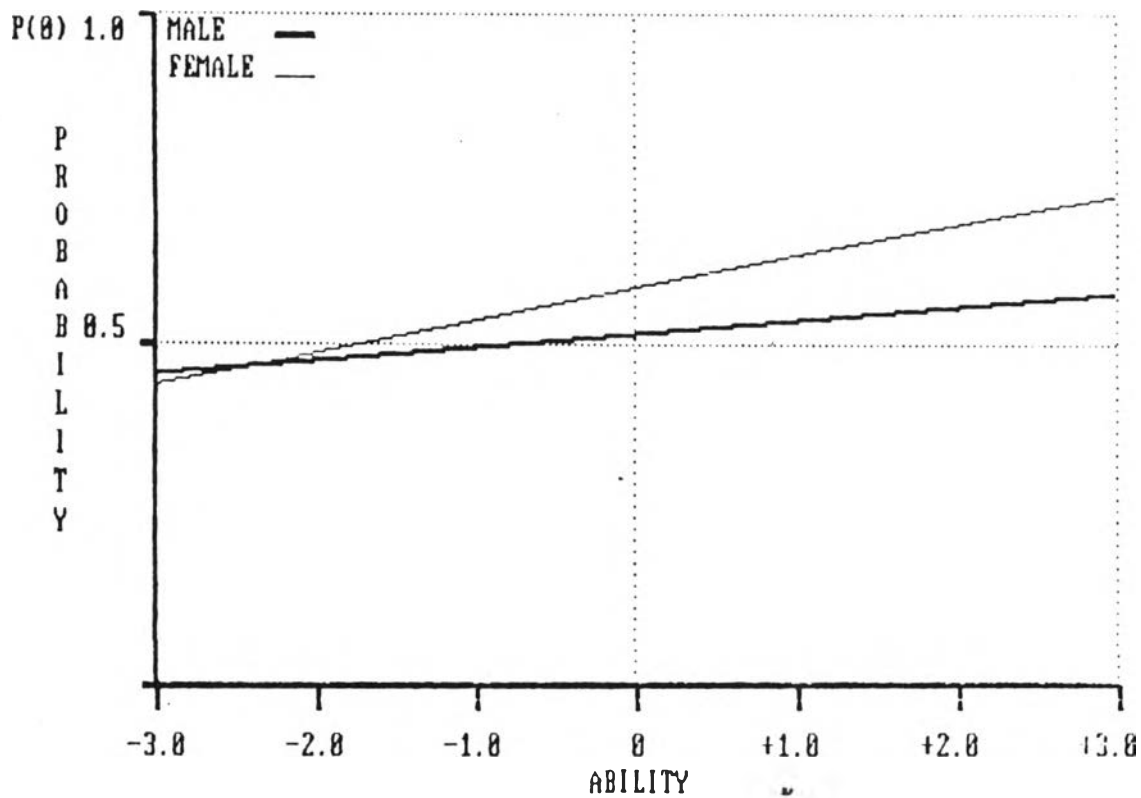


FIGURE 180 PLOT ITEM CHARACTERISTIC CURVE (v071)

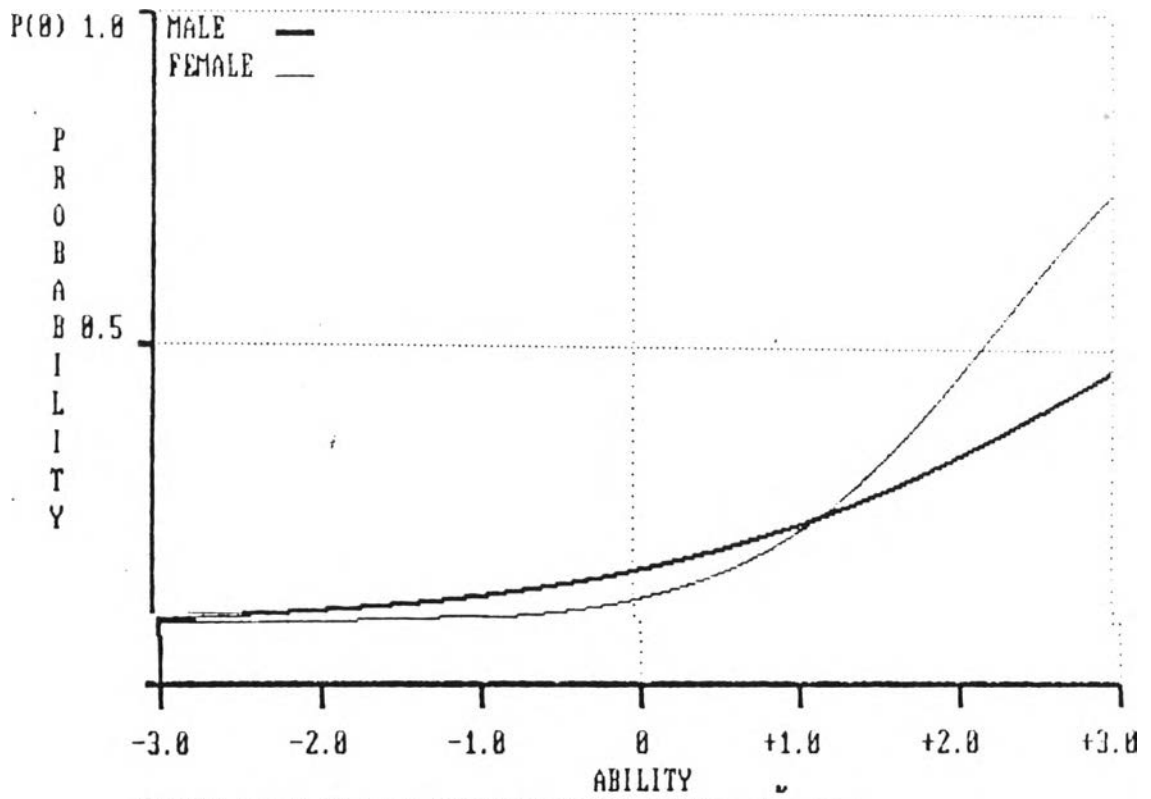


FIGURE 181 PLOT ITEM CHARACTERISTIC CURVE (ID 72)

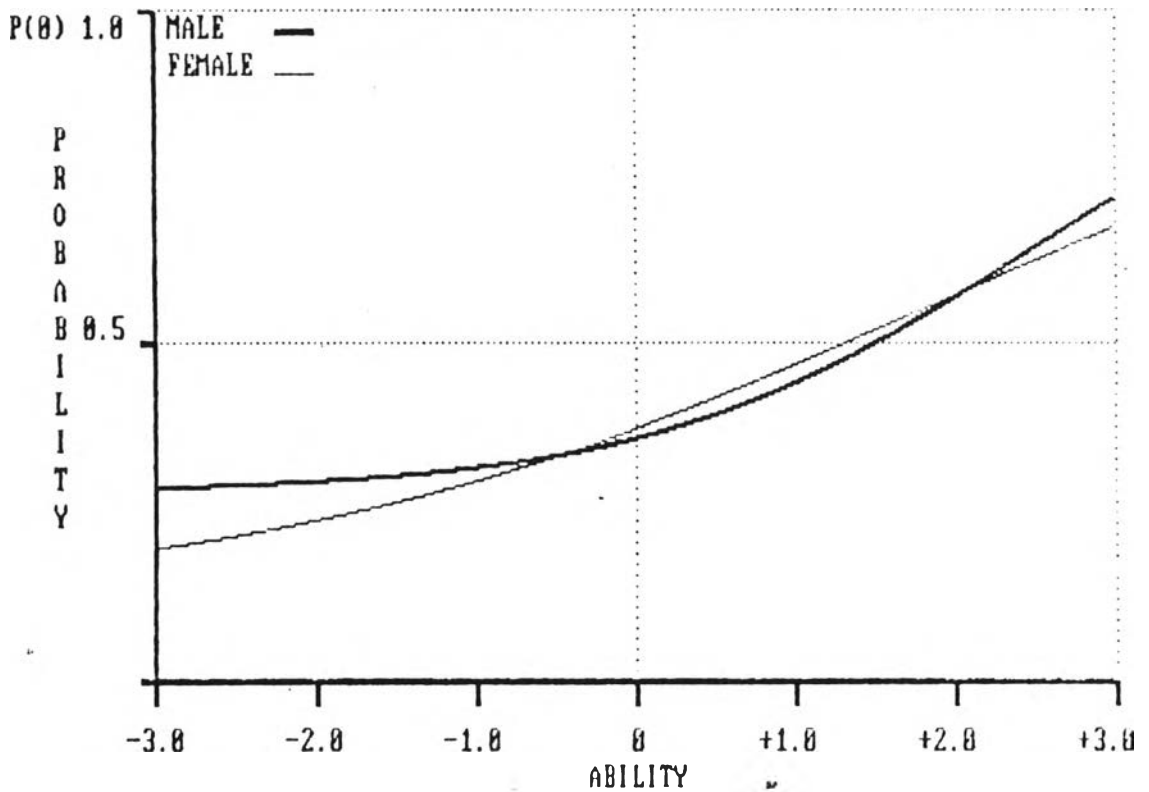


FIGURE 182 PLOT ITEM CHARACTERISTIC CURVE (ID 73)

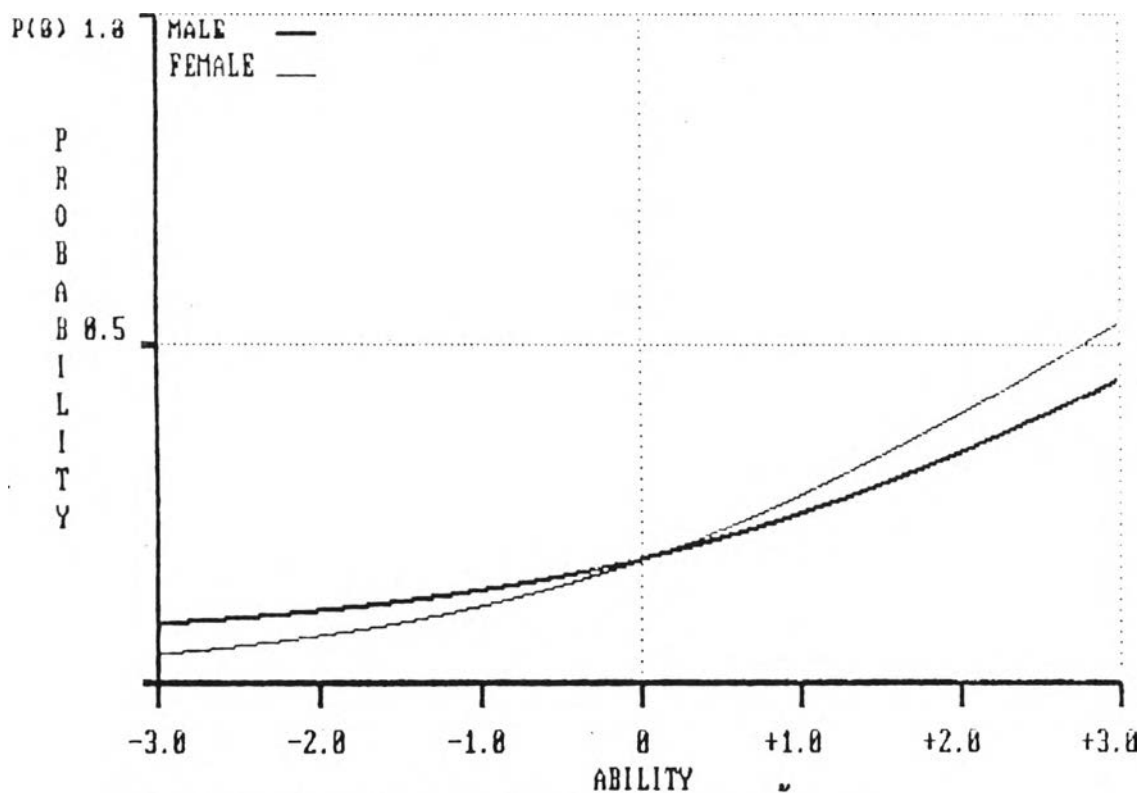


FIGURE 183 PLOT ITEM CHARACTERISTIC CURVE (75)

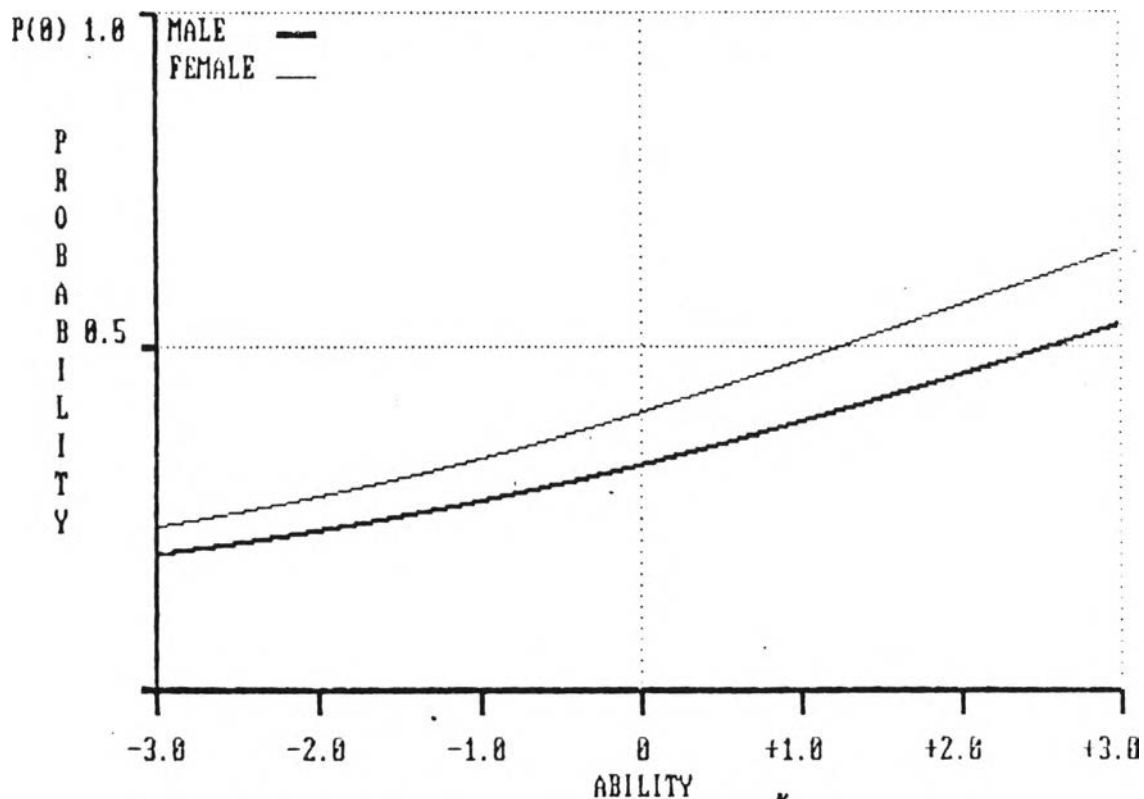


FIGURE 184 PLOT ITEM CHARACTERISTIC CURVE (76)

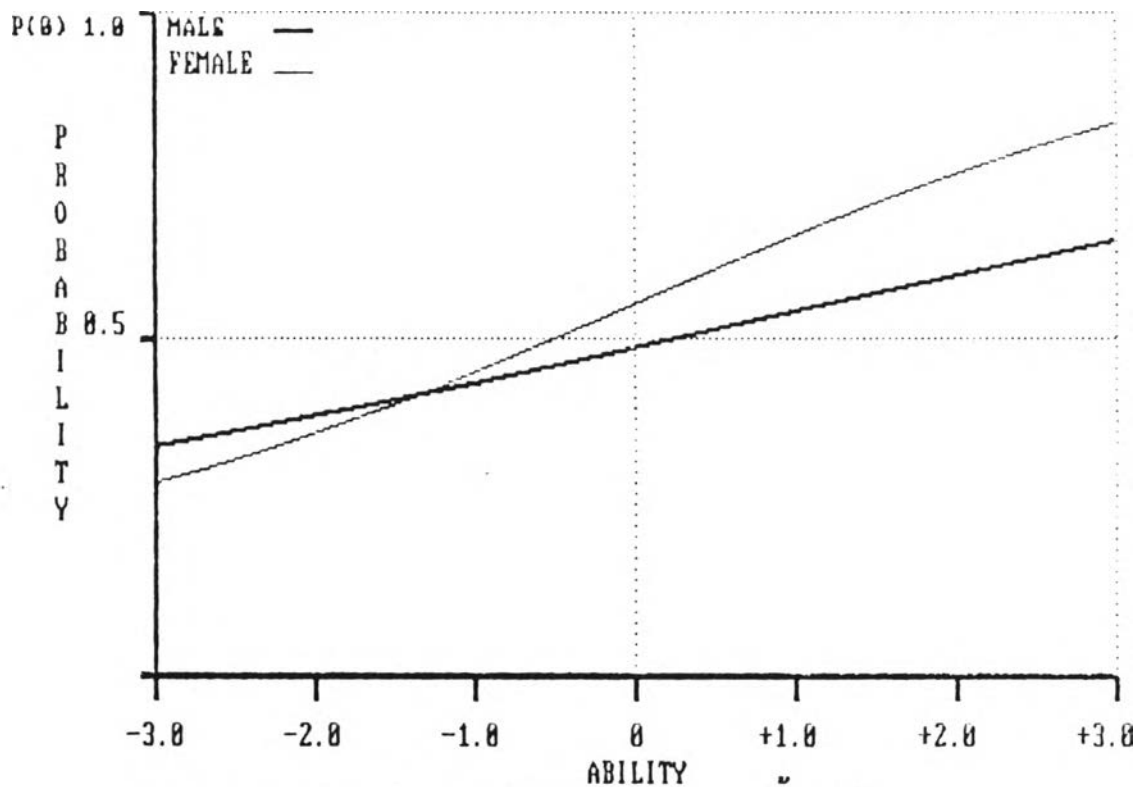


FIGURE 185 PLOT ITEM CHARACTERISTIC CURVE (no 77)

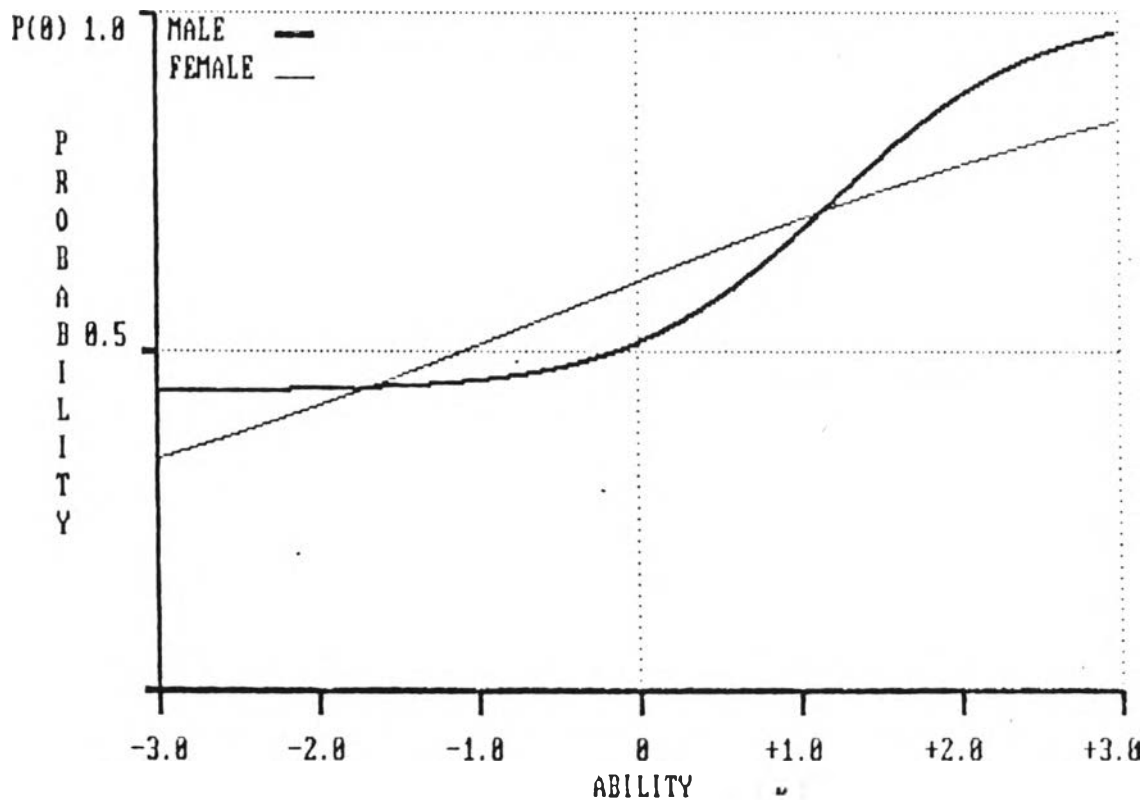


FIGURE 186 PLOT ITEM CHARACTERISTIC CURVE (no 80)



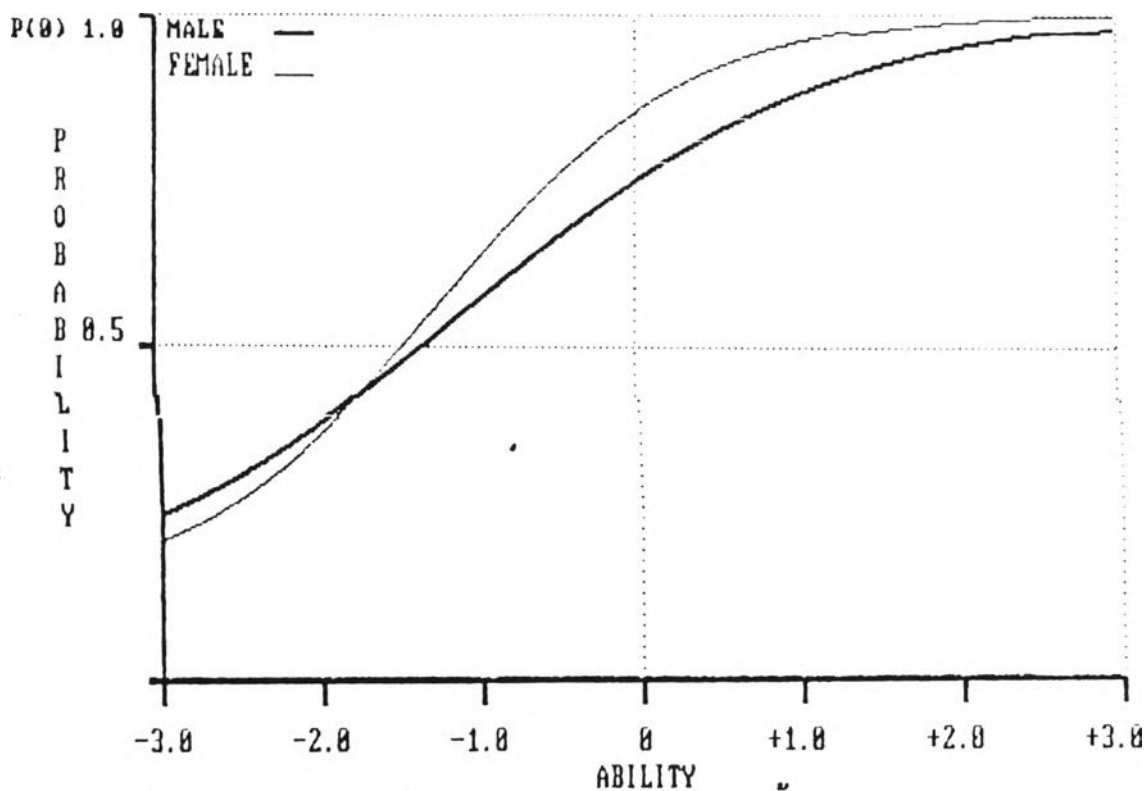


FIGURE 187 PLOT ITEM CHARACTERISTIC CURVE (187)

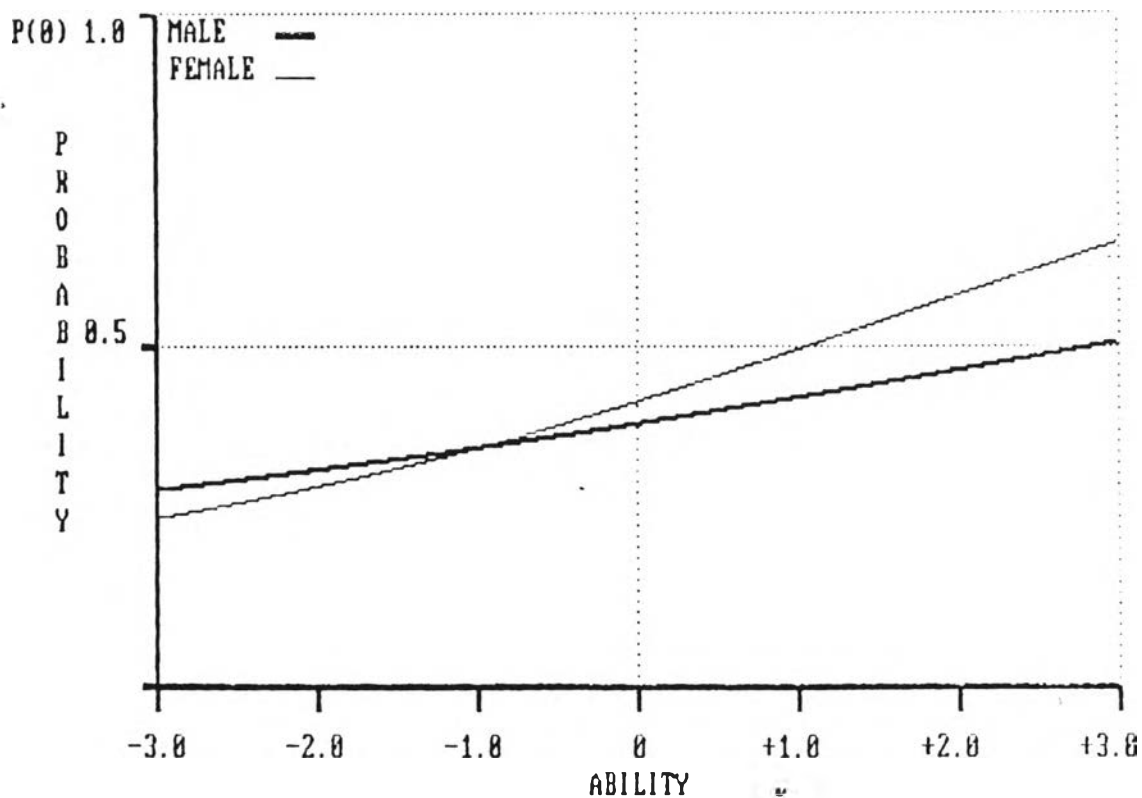


FIGURE 188 PLOT ITEM CHARACTERISTIC CURVE (188)

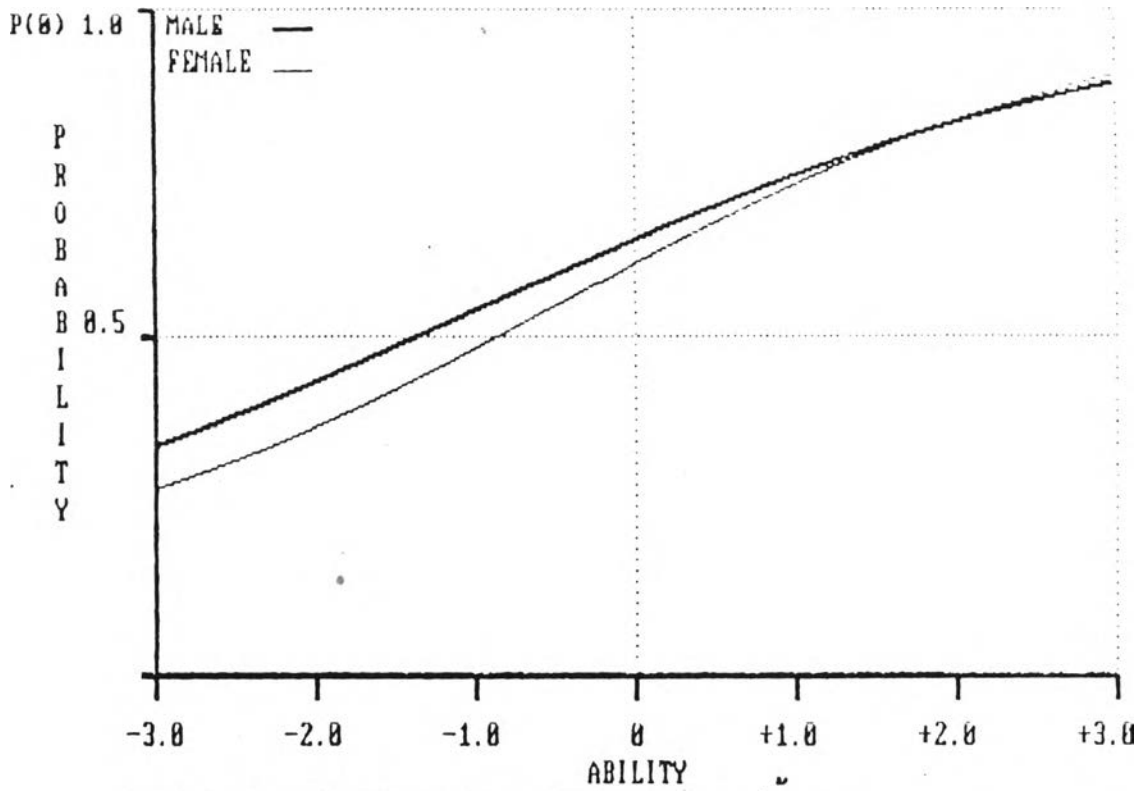


FIGURE 189 PLOT ITEM CHARACTERISTIC CURVE (7091)

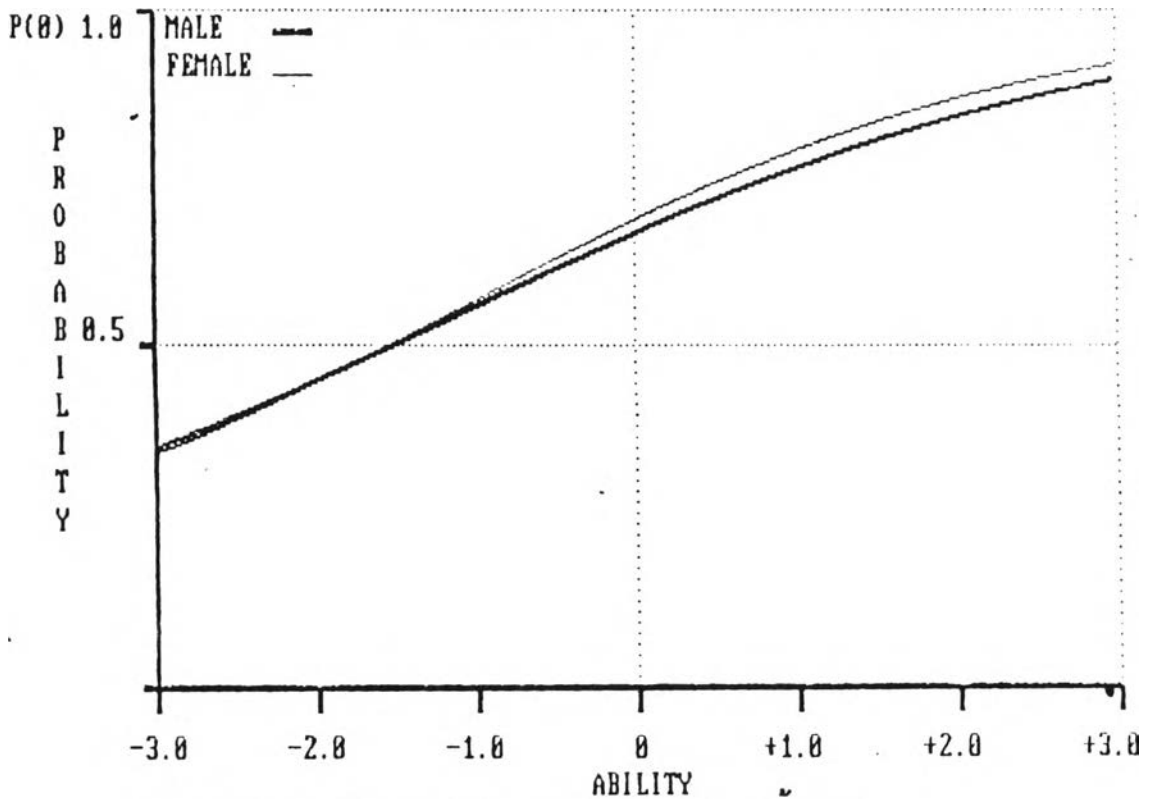


FIGURE 190 PLOT ITEM CHARACTERISTIC CURVE (7093)

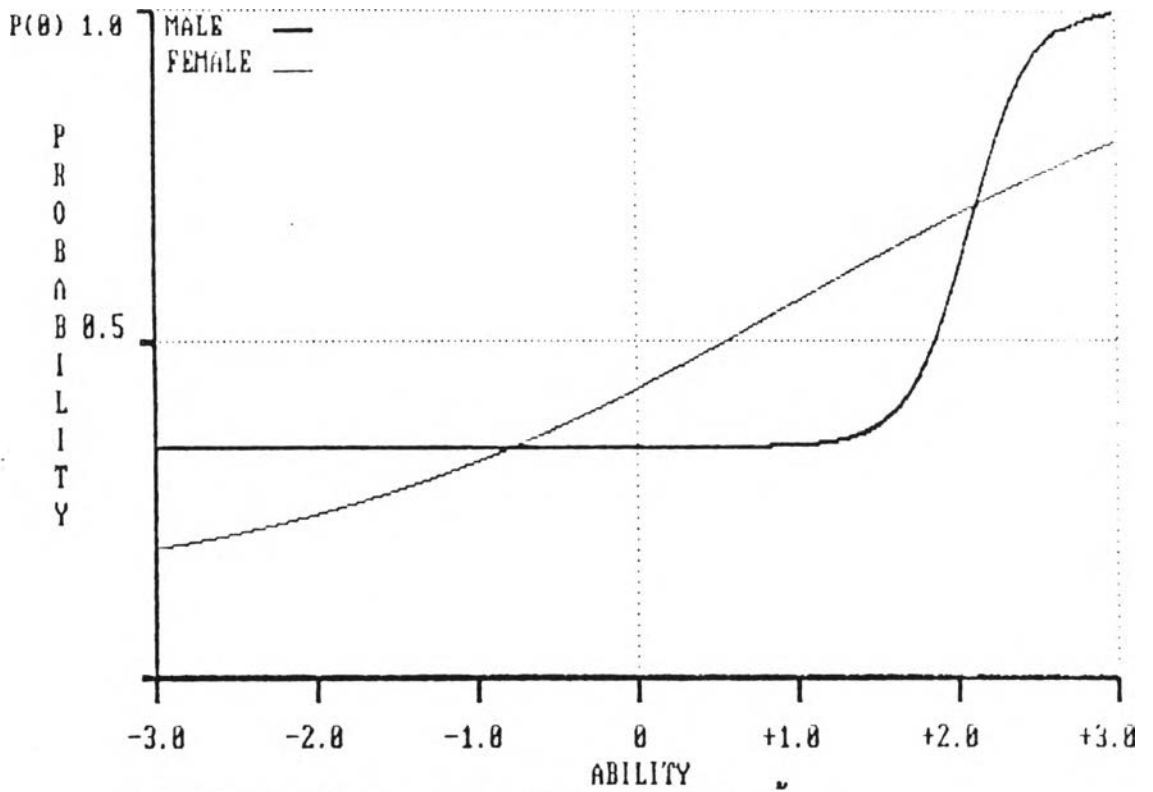


FIGURE 191 PLOT ITEM CHARACTERISTIC CURVE (no 97)

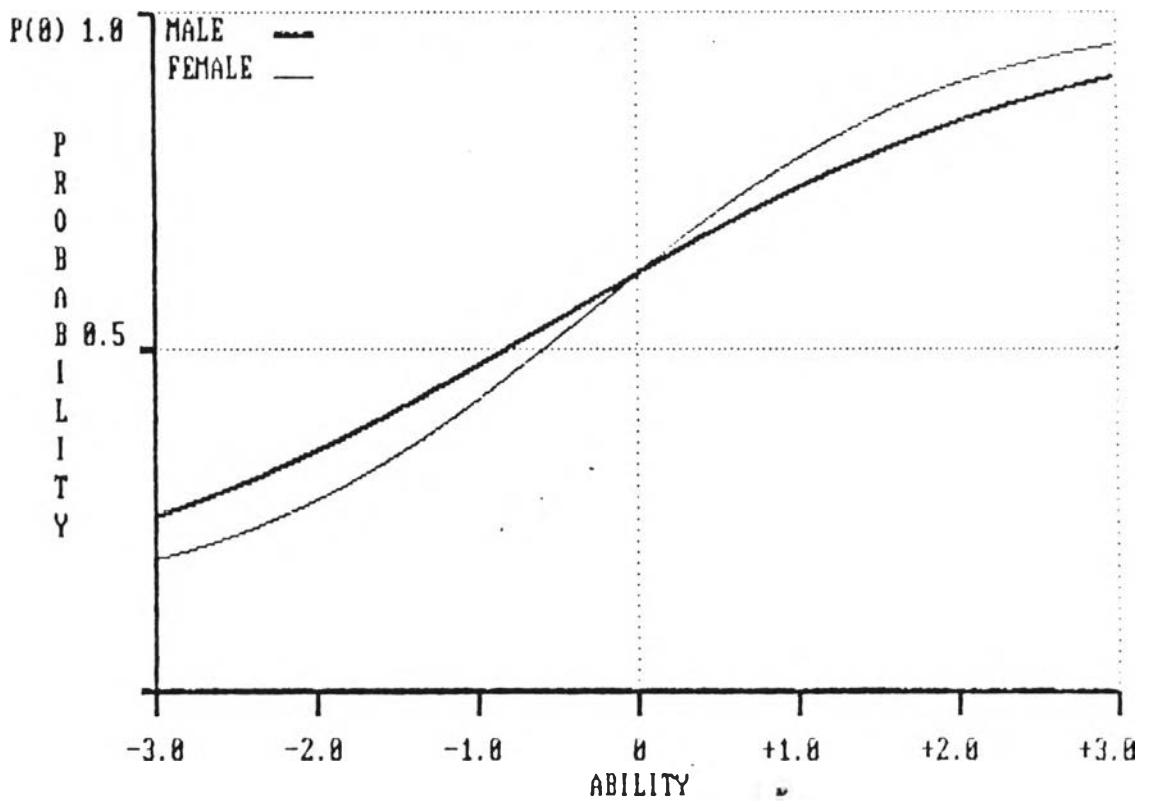


FIGURE 192 PLOT ITEM CHARACTERISTIC CURVE (no 100)

โค้งลักษณะข้อสอบจากแบบฉบับที่ 4

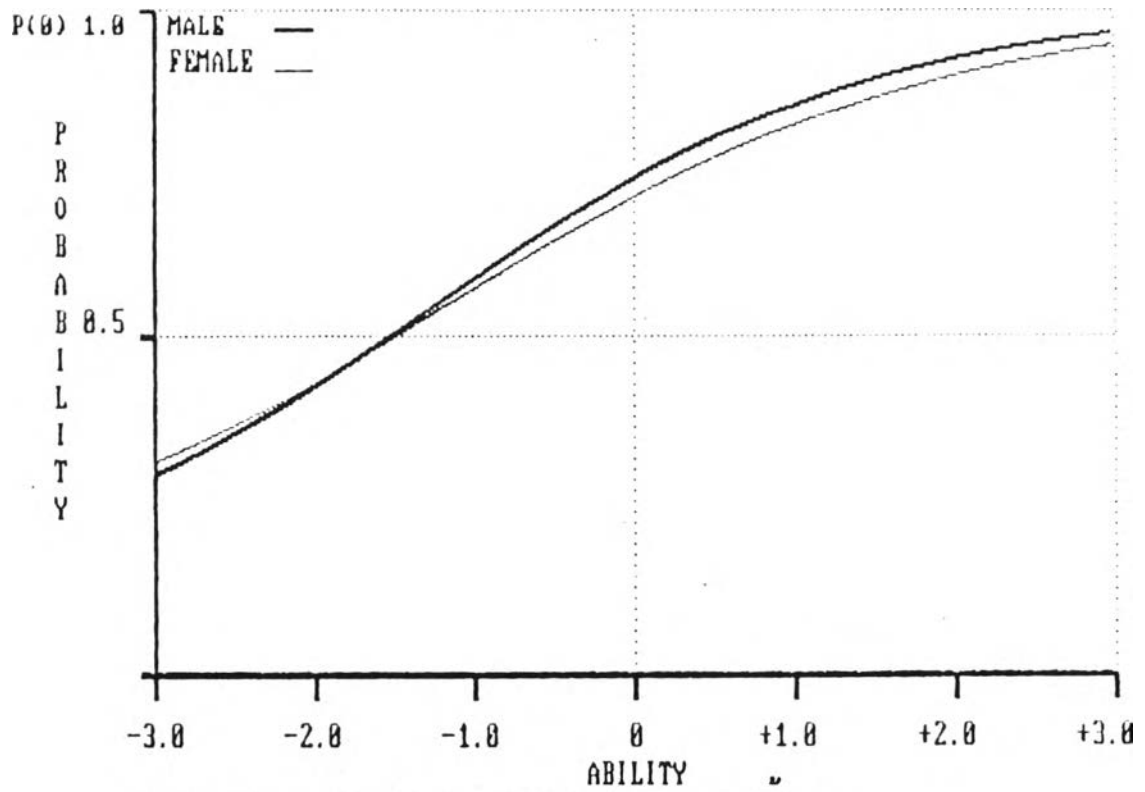


FIGURE 193 PLOT ITEM CHARACTERISTIC CURVE (no 1)

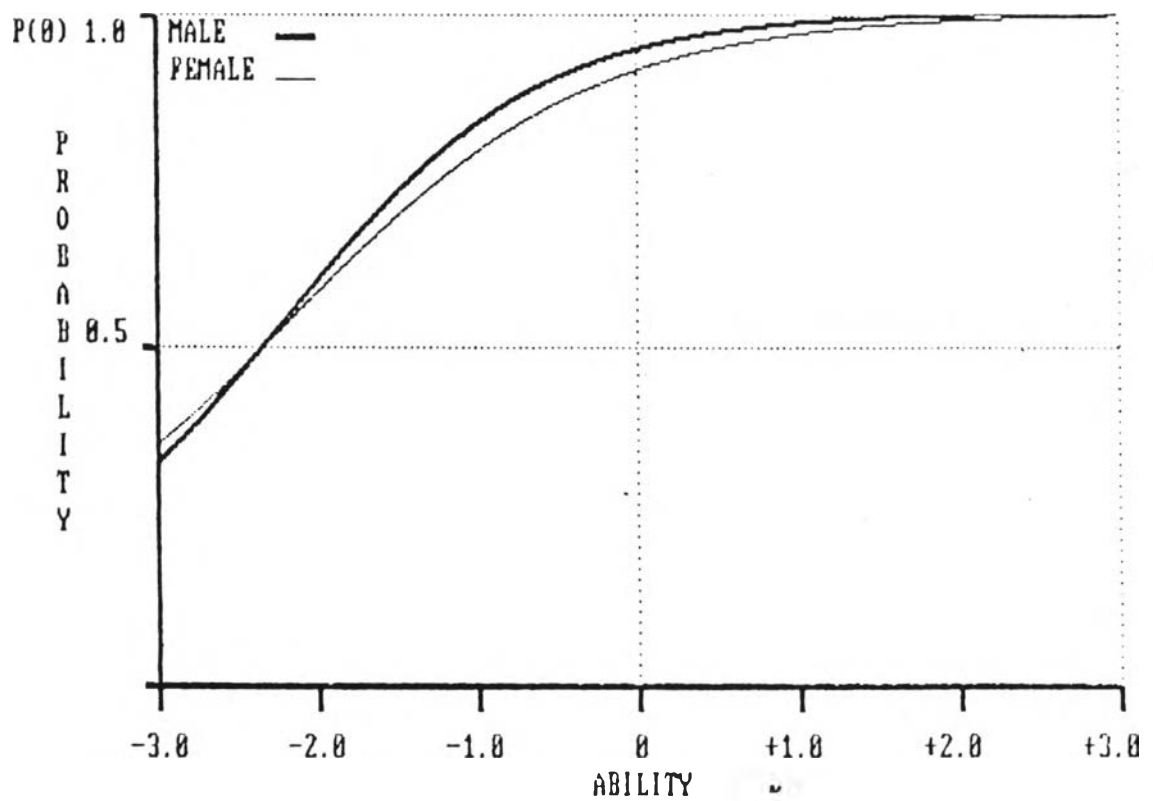


FIGURE 194 PLOT ITEM CHARACTERISTIC CURVE (no 3)

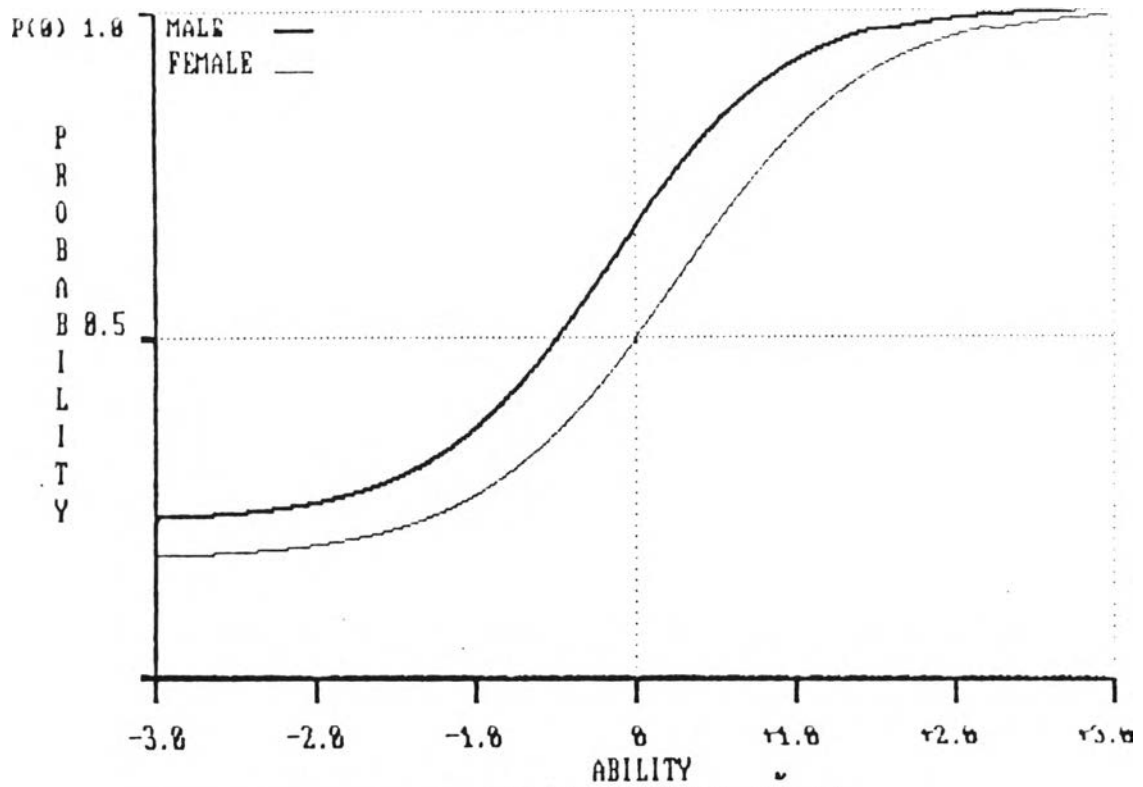


FIGURE 195 PLOT ITEM CHARACTERISTIC CURVE (page 4)

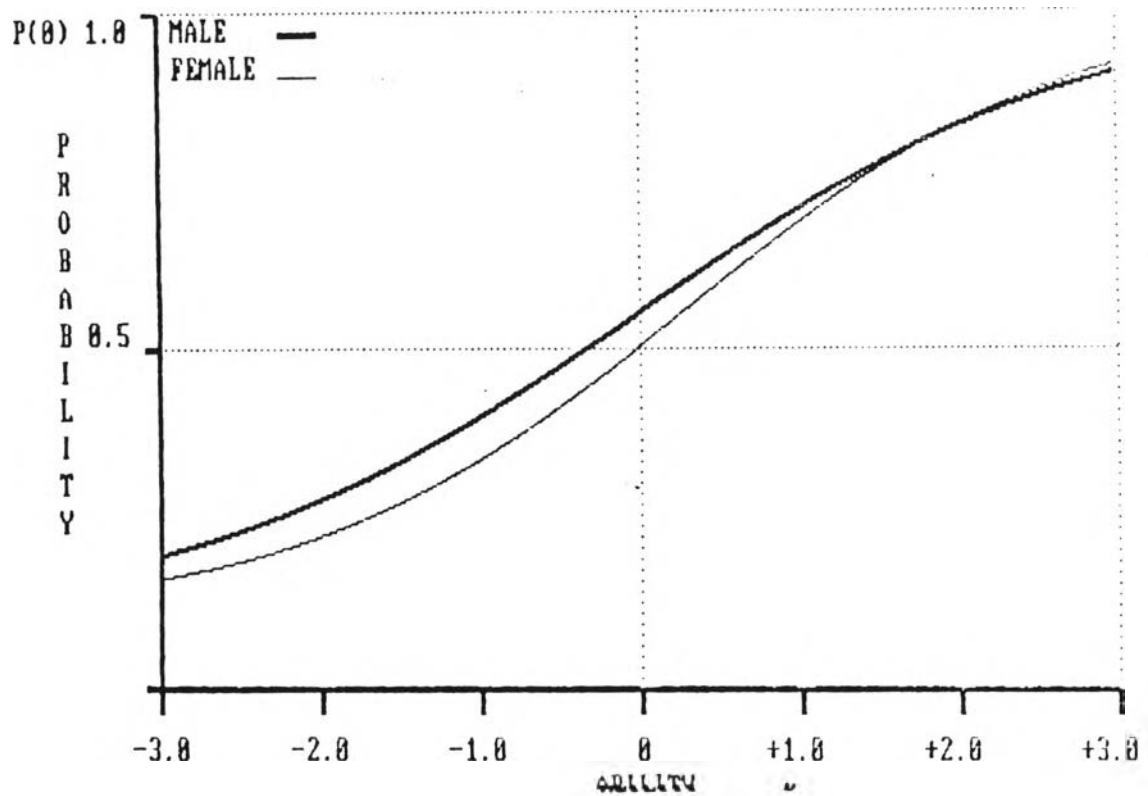


FIGURE 196 PLOT ITEM CHARACTERISTIC CURVE (page 6)

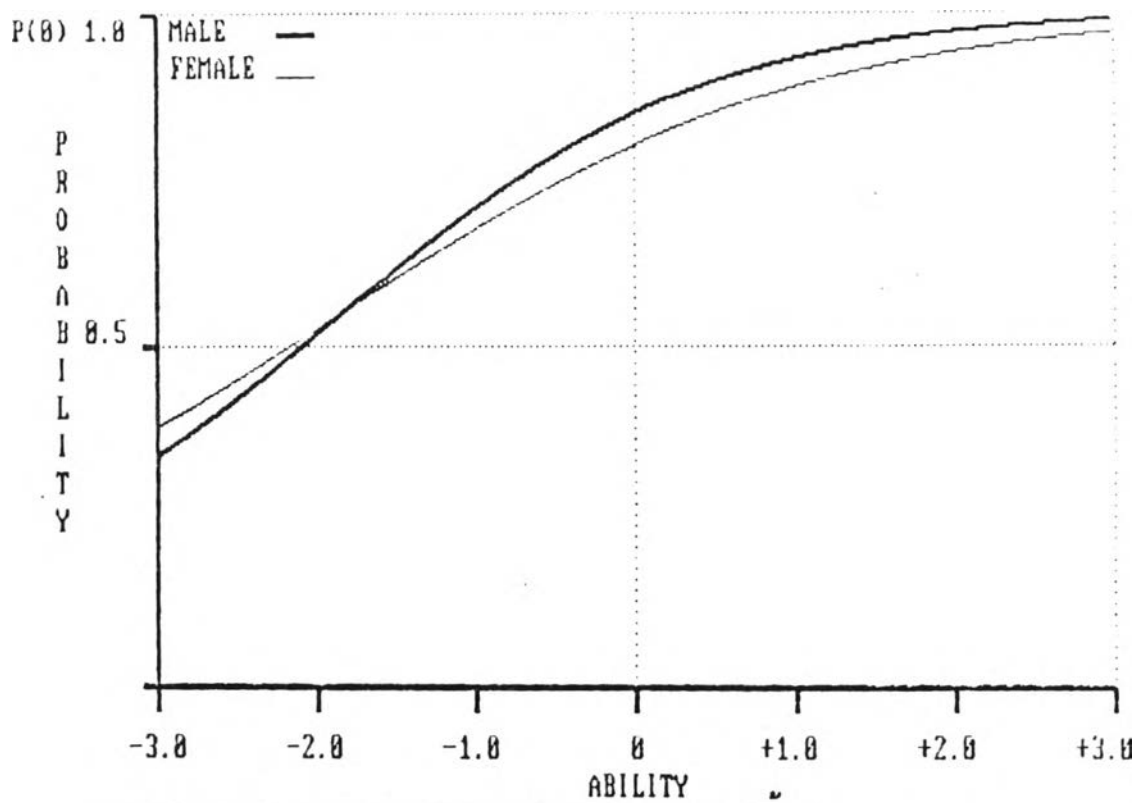


FIGURE 197 PLOT ITEM CHARACTERISTIC CURVE (item 7)

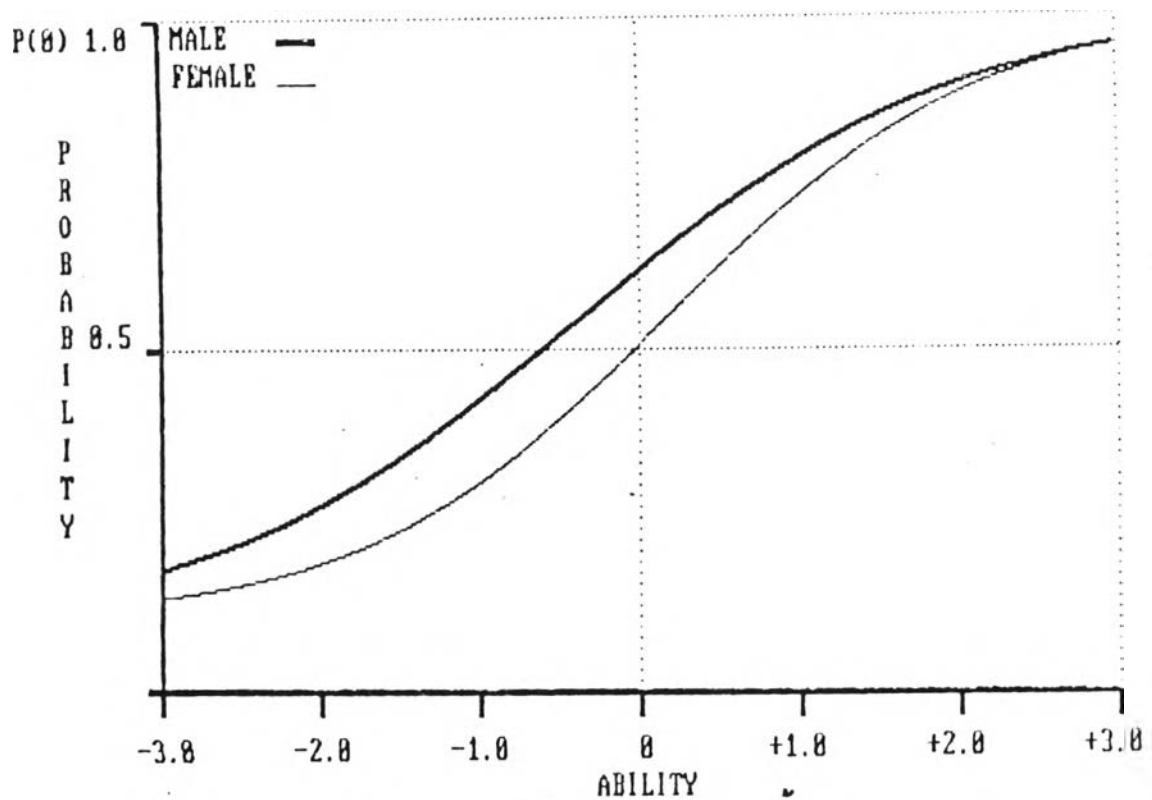


FIGURE 198 PLOT ITEM CHARACTERISTIC CURVE (item 8)

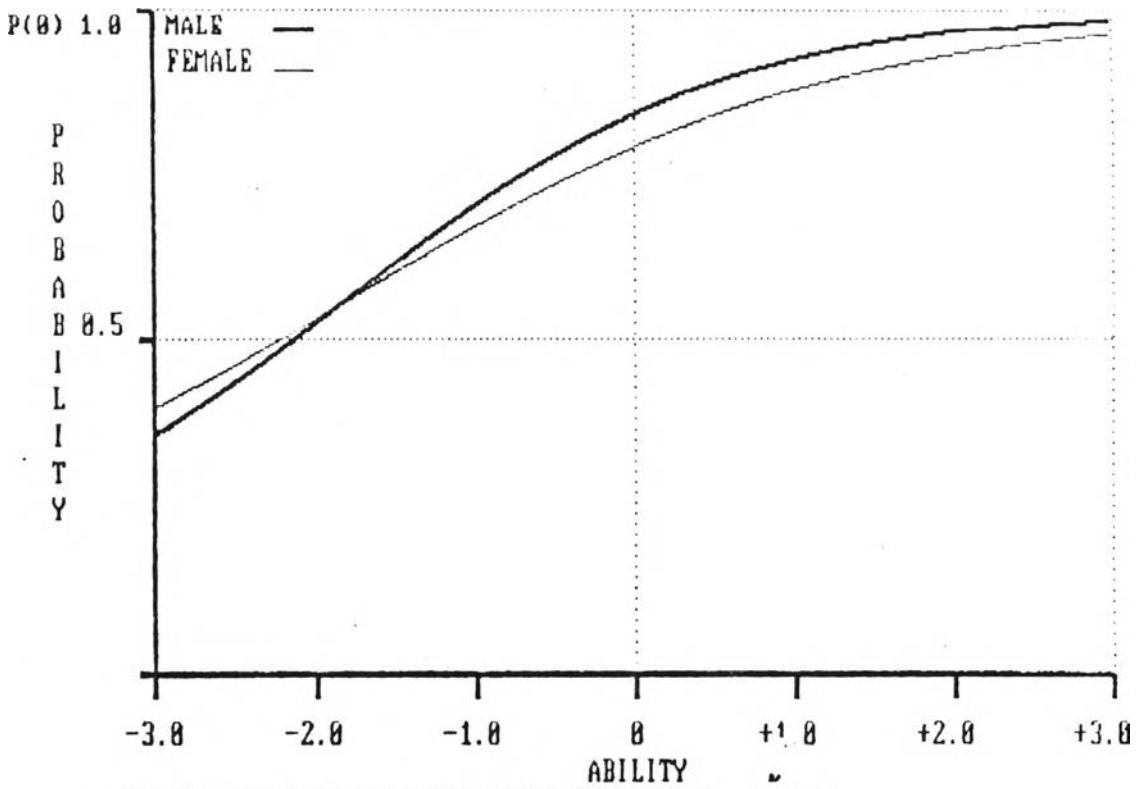


FIGURE 199 PLOT ITEM CHARACTERISTIC CURVE (709)

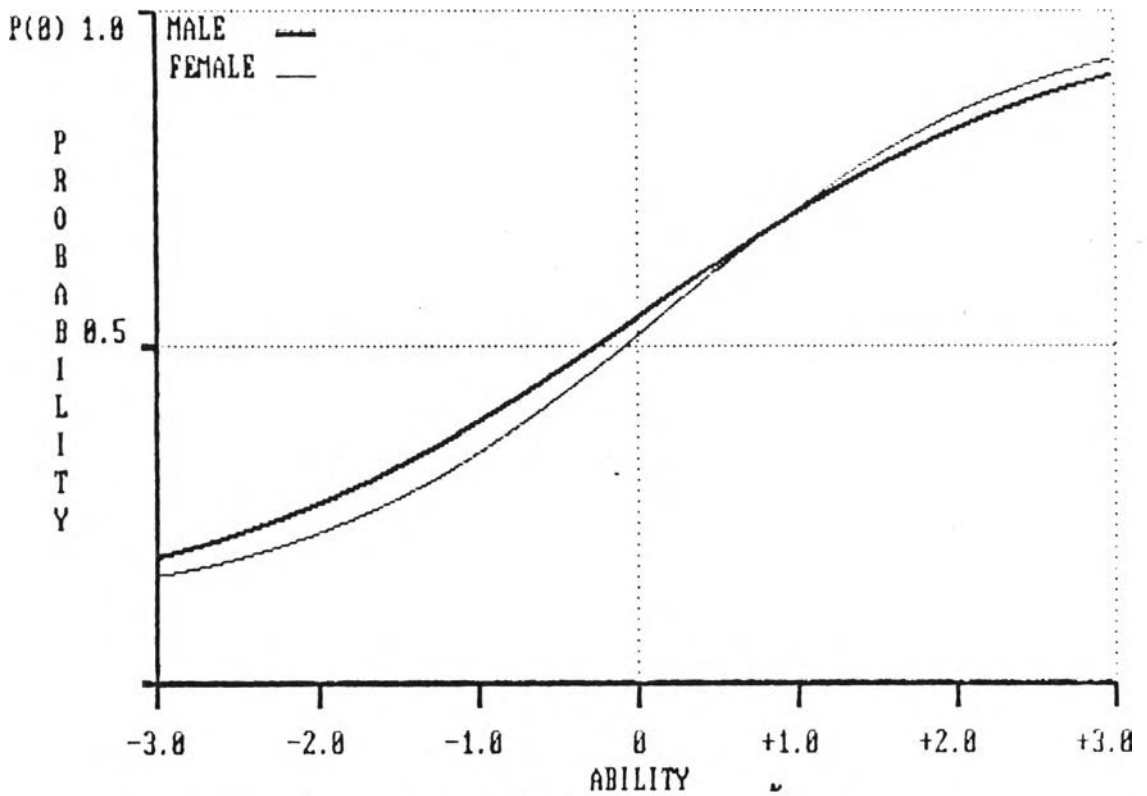


FIGURE 200 PLOT ITEM CHARACTERISTIC CURVE (710)



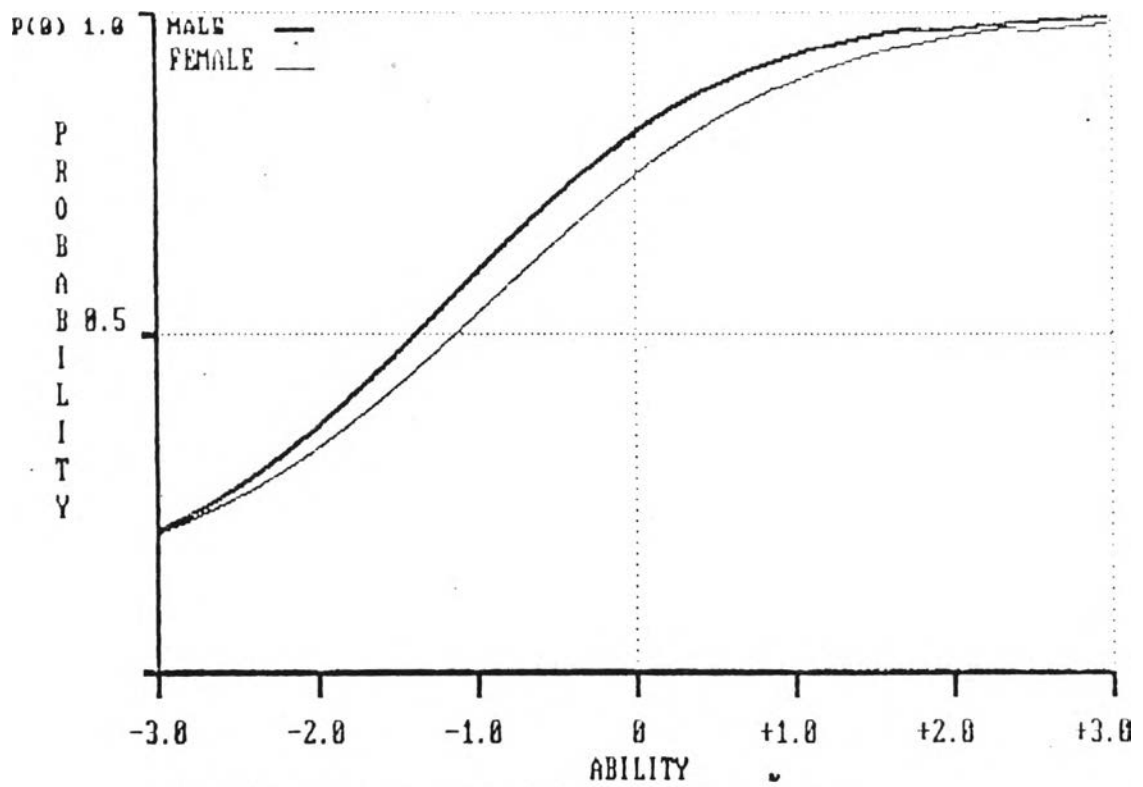


FIGURE 281 PLOT ITEM CHARACTERISTIC CURVE (item 11)

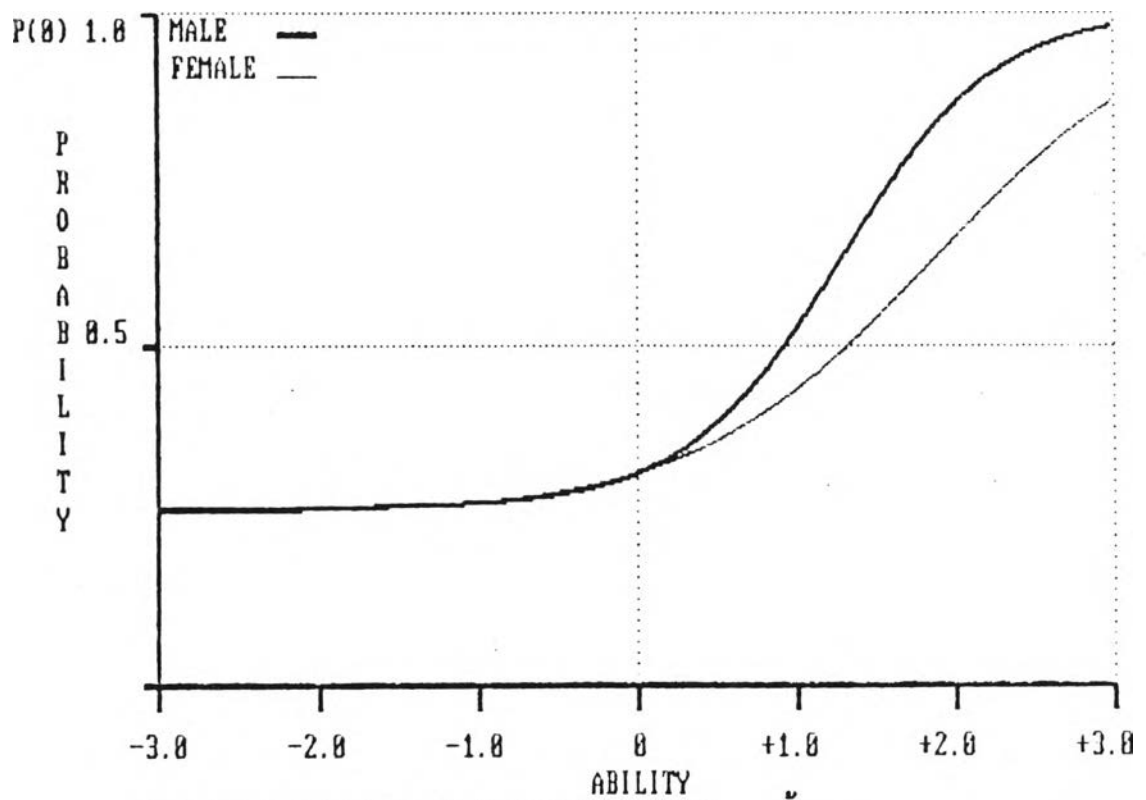


FIGURE 282 PLOT ITEM CHARACTERISTIC CURVE (item 12)

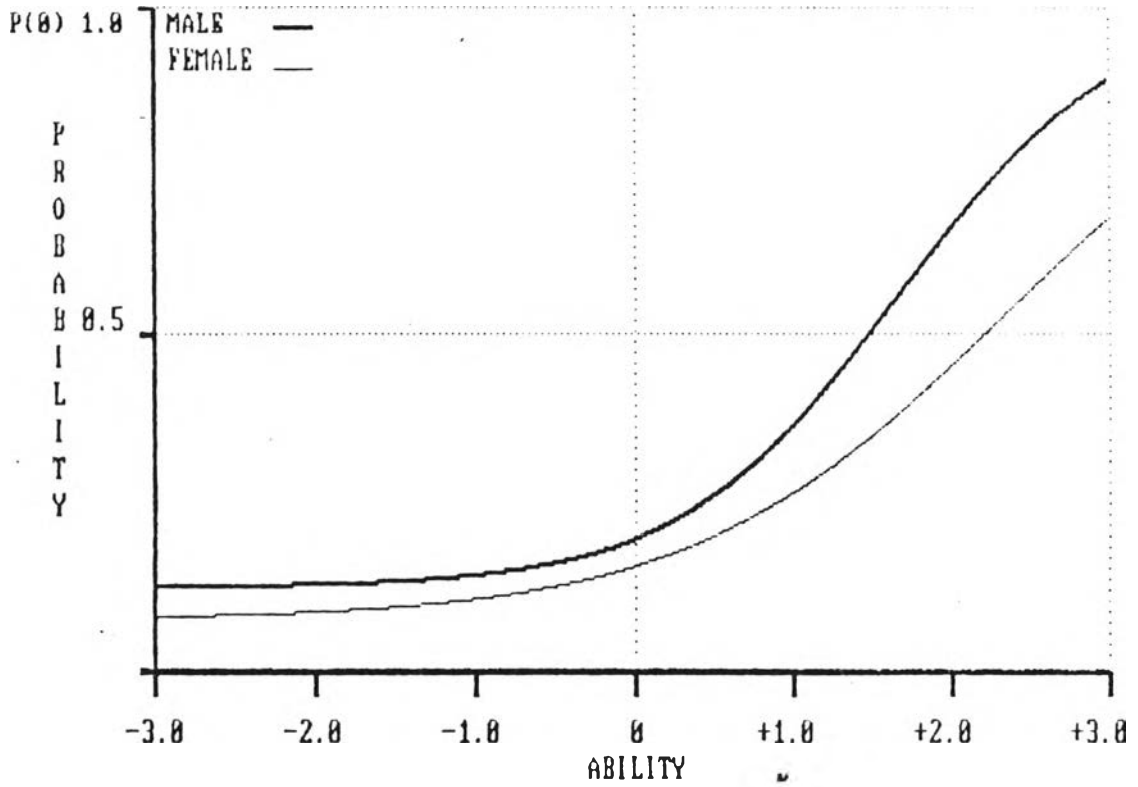


FIGURE 283 PLOT ITEM CHARACTERISTIC CURVE (item 13)

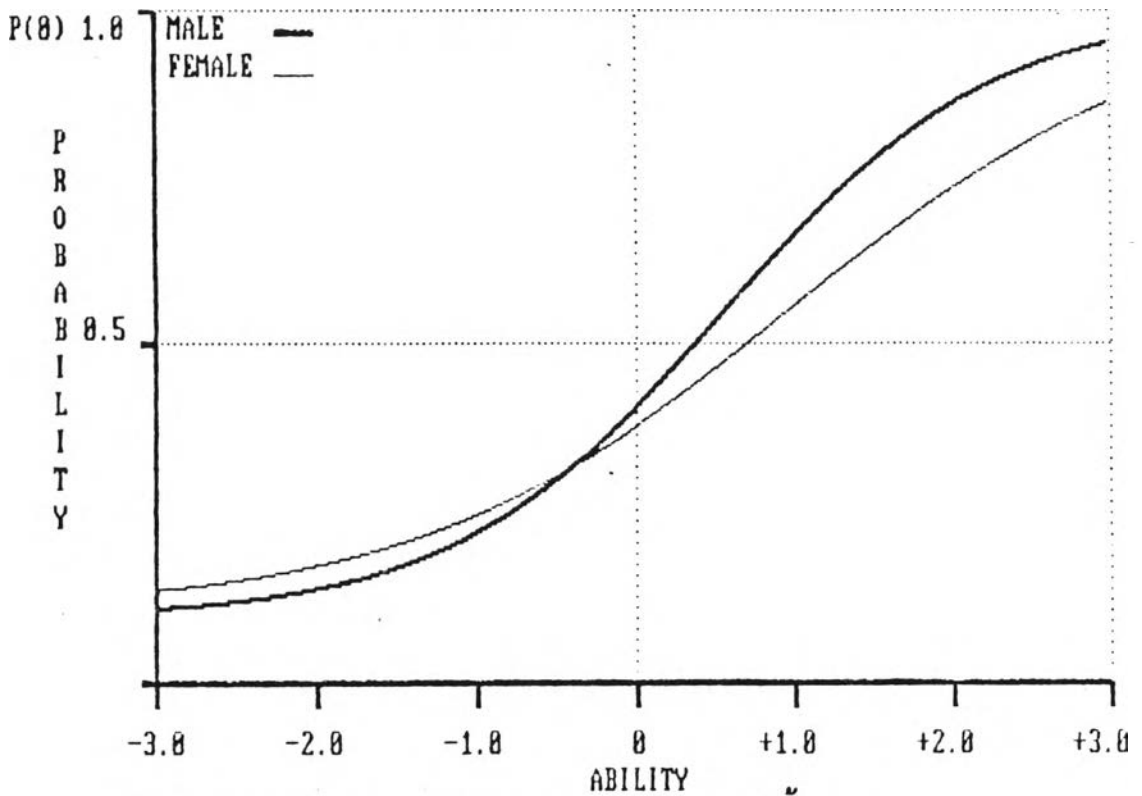


FIGURE 284 PLOT ITEM CHARACTERISTIC CURVE (item 14)

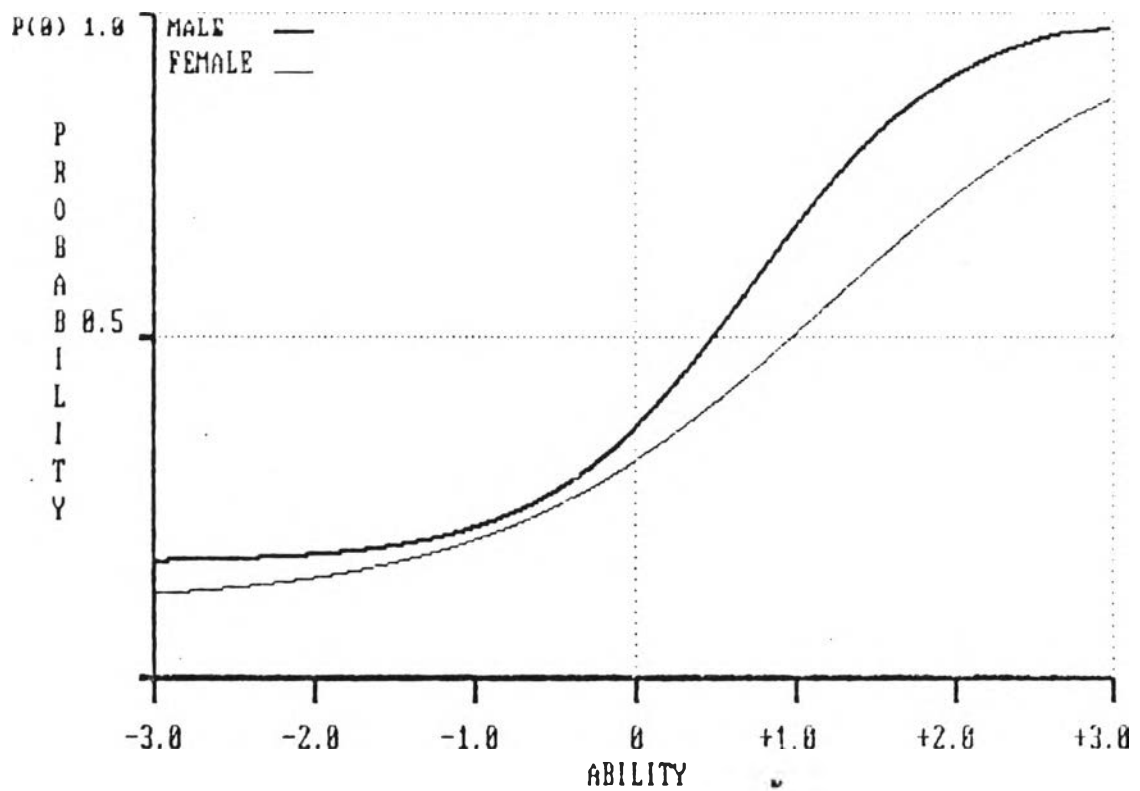


FIGURE 205 PLOT ITEM CHARACTERISTIC CURVE (no 15)

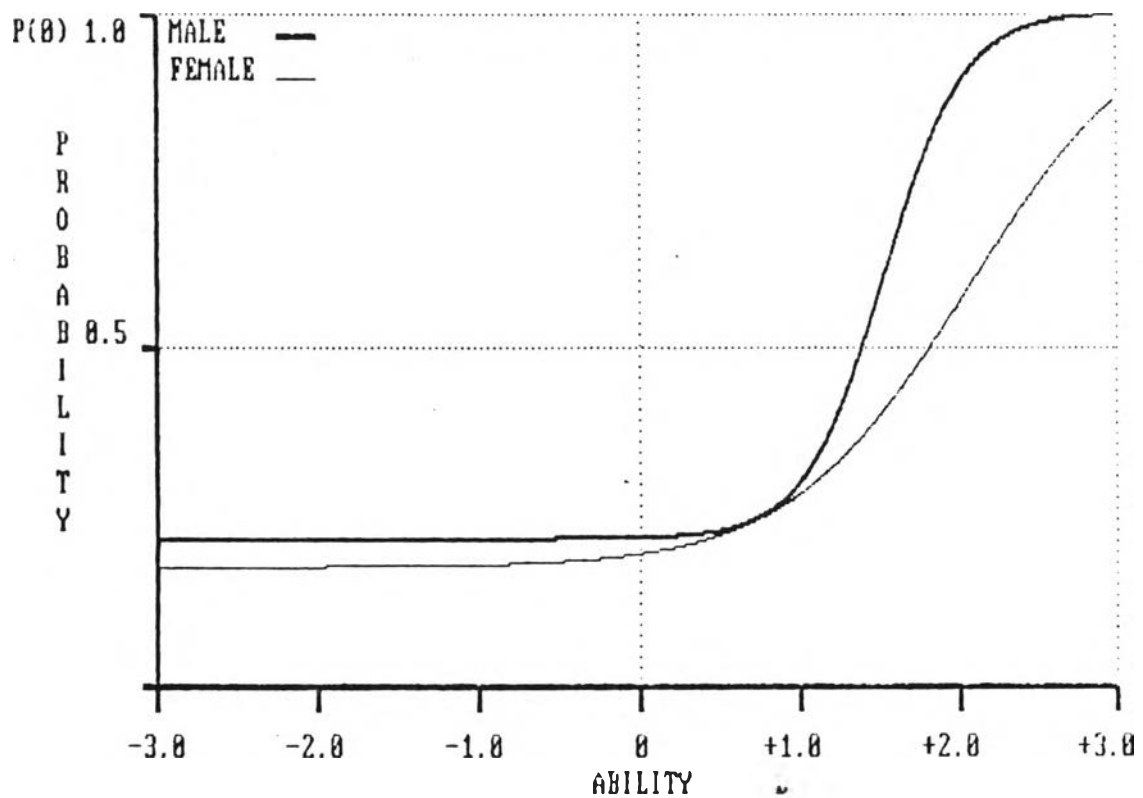


FIGURE 206 PLOT ITEM CHARACTERISTIC CURVE (no 16)

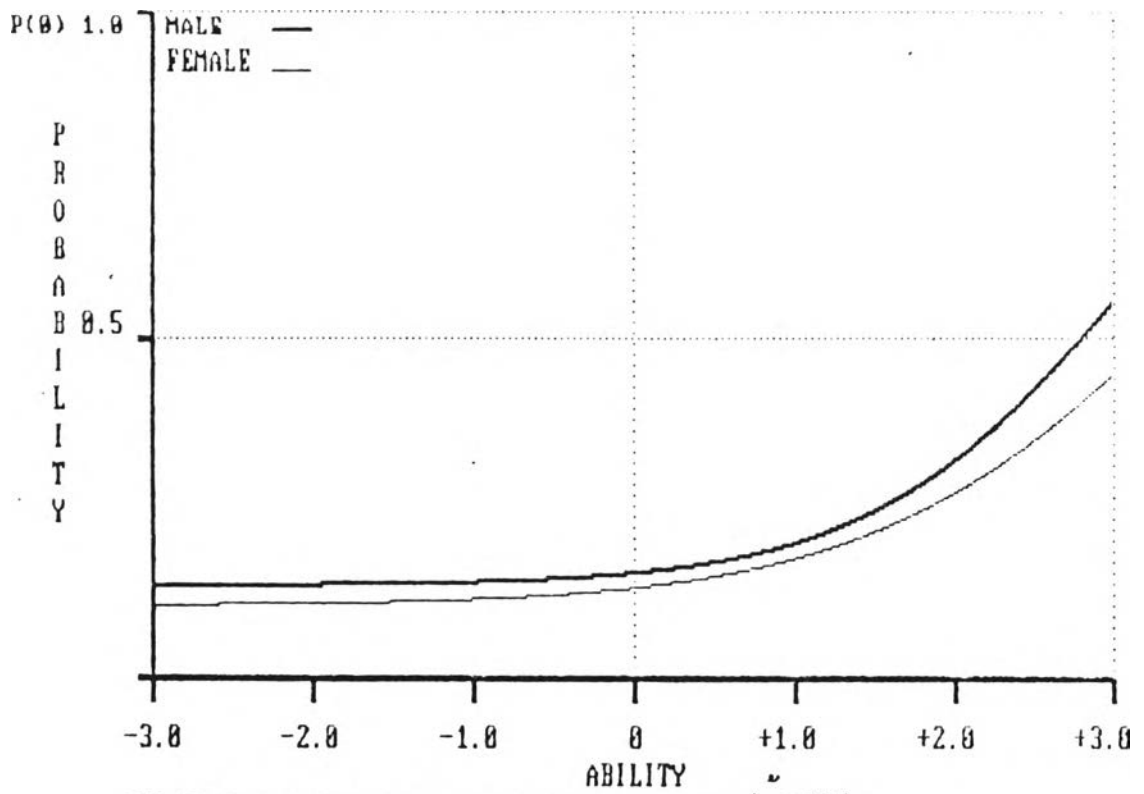


FIGURE 207 PLOT ITEM CHARACTERISTIC CURVE (item 17)

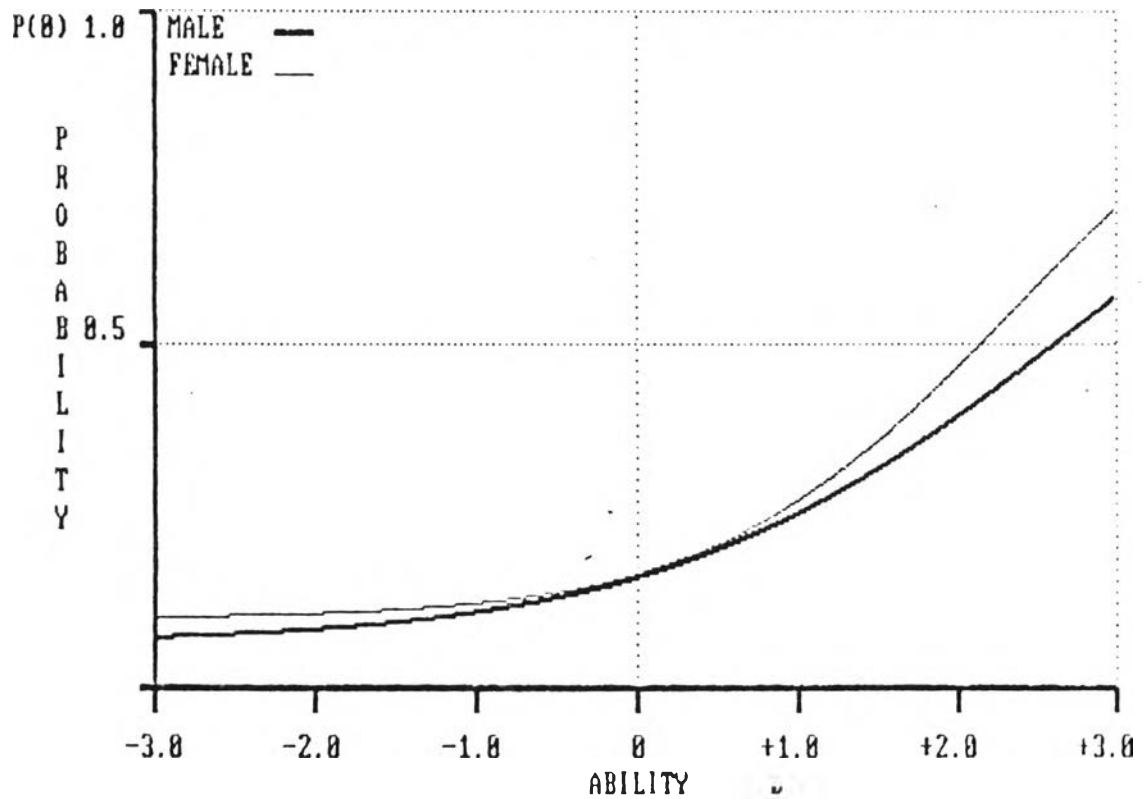


FIGURE 208 PLOT ITEM CHARACTERISTIC CURVE (item 18)

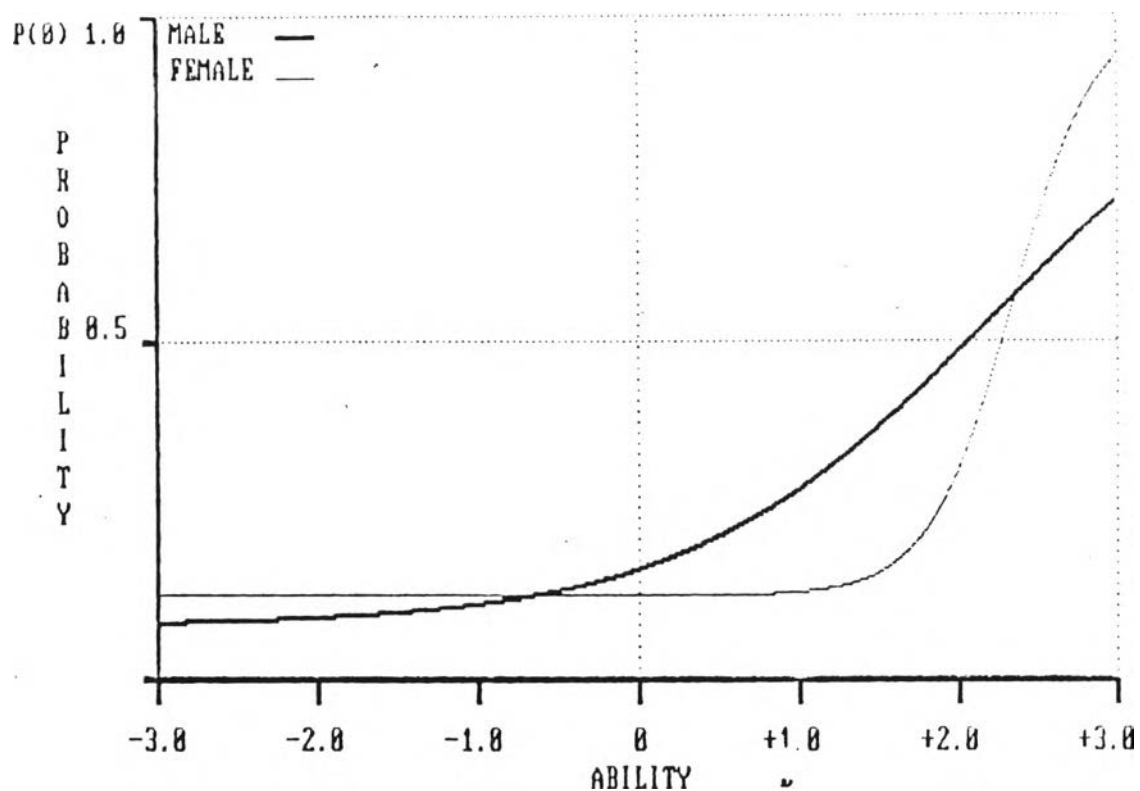


FIGURE 209 PLOT ITEM CHARACTERISTIC CURVE (no 20)

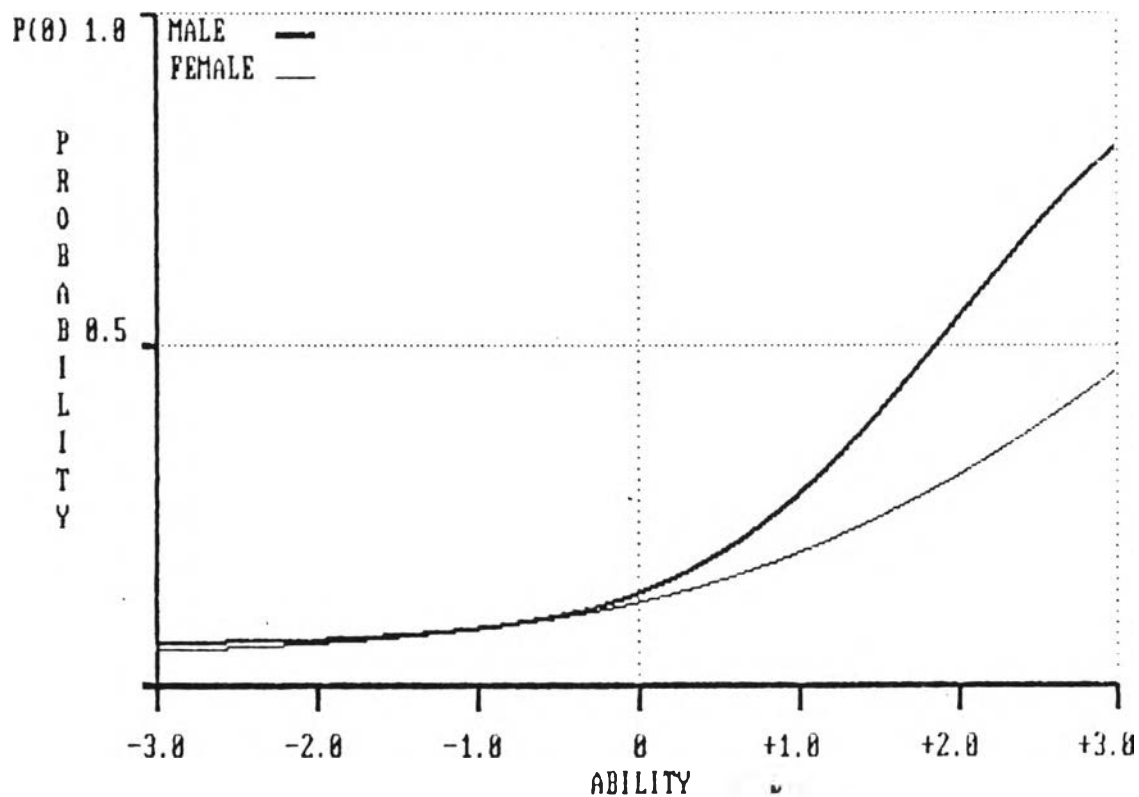


FIGURE 210 PLOT ITEM CHARACTERISTIC CURVE (no 23)

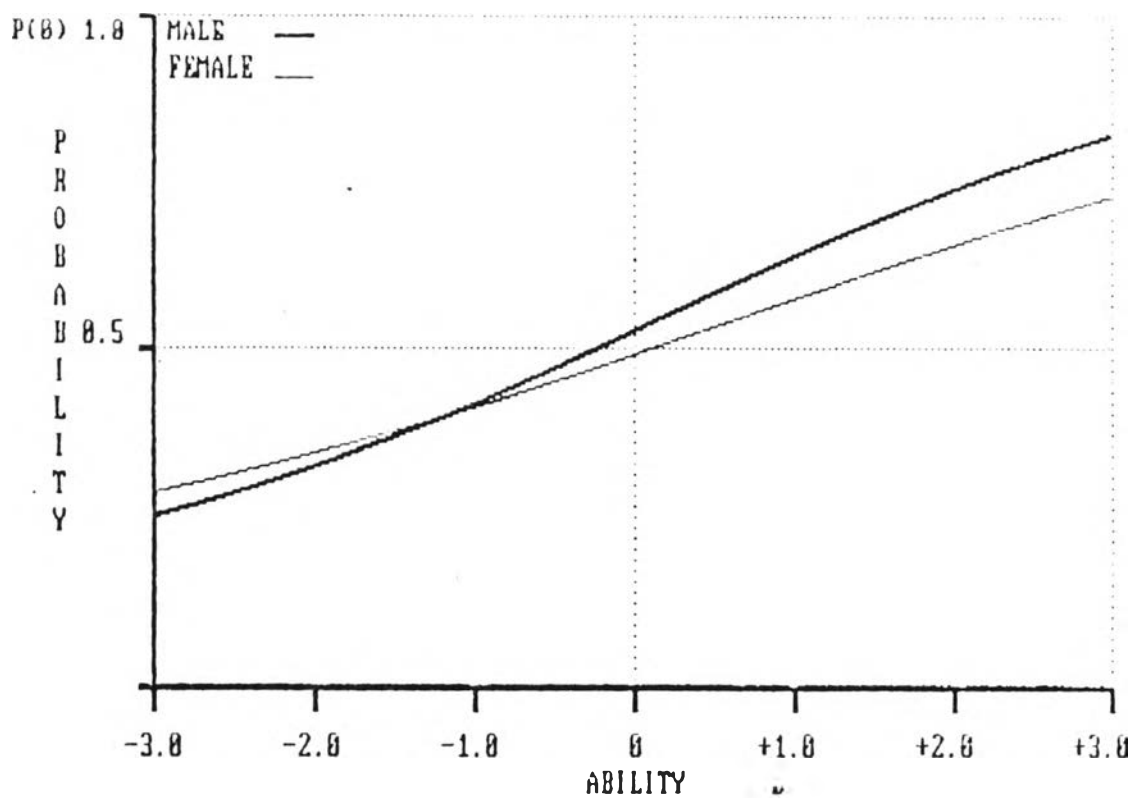


FIGURE 211 PLOT ITEM CHARACTERISTIC CURVE (ID 24)

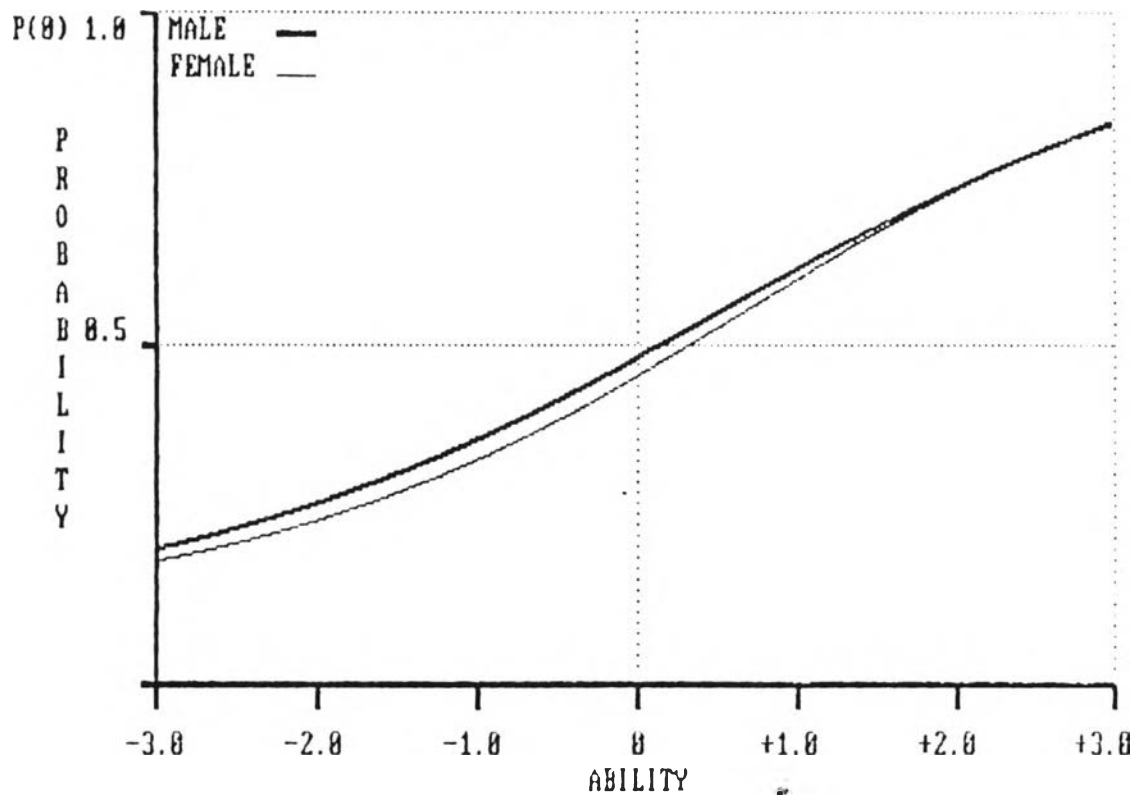


FIGURE 212 PLOT ITEM CHARACTERISTIC CURVE (ID 26)

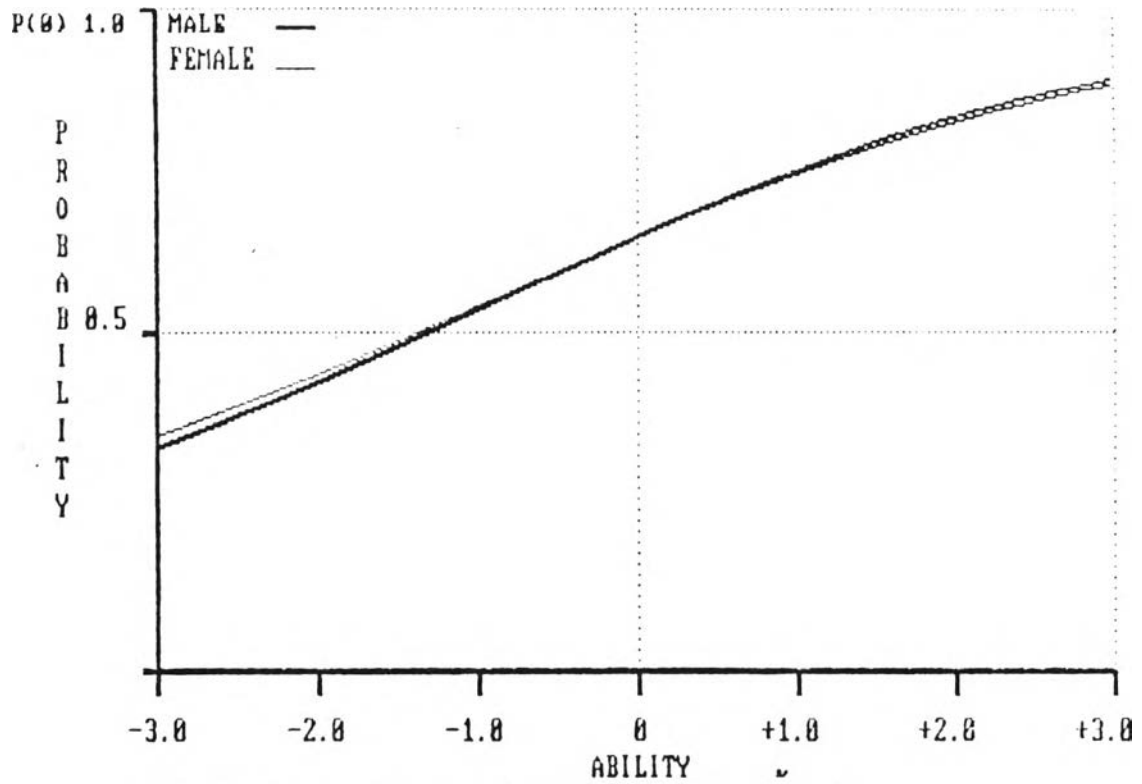


FIGURE 213 PLOT ITEM CHARACTERISTIC CURVE (item 28)

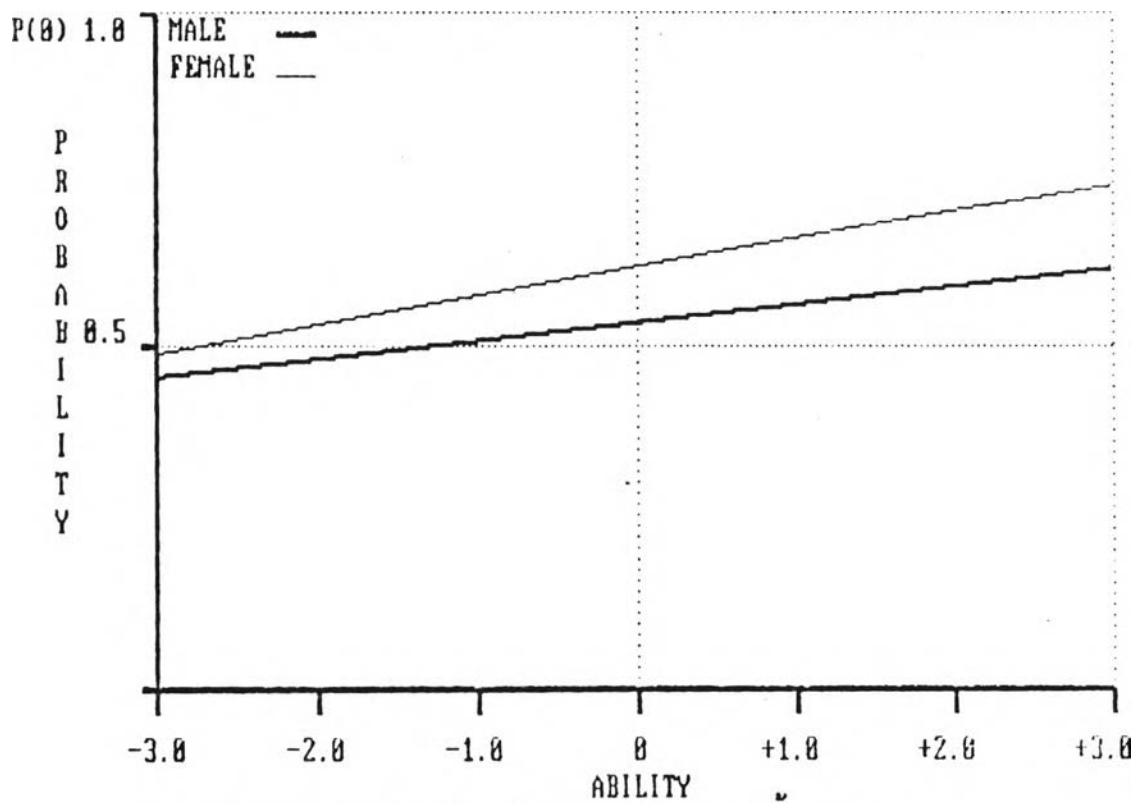


FIGURE 214 PLOT ITEM CHARACTERISTIC CURVE (item 29)

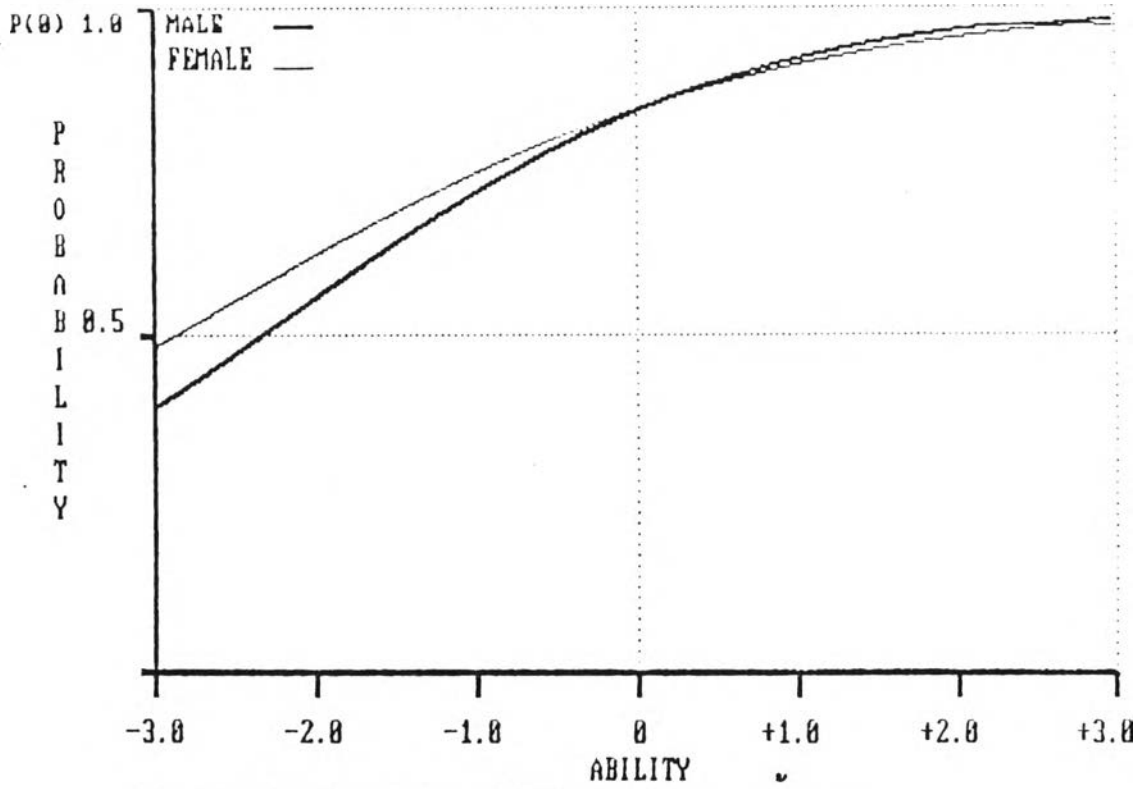


FIGURE 215 PLOT ITEM CHARACTERISTIC CURVE (item 31)

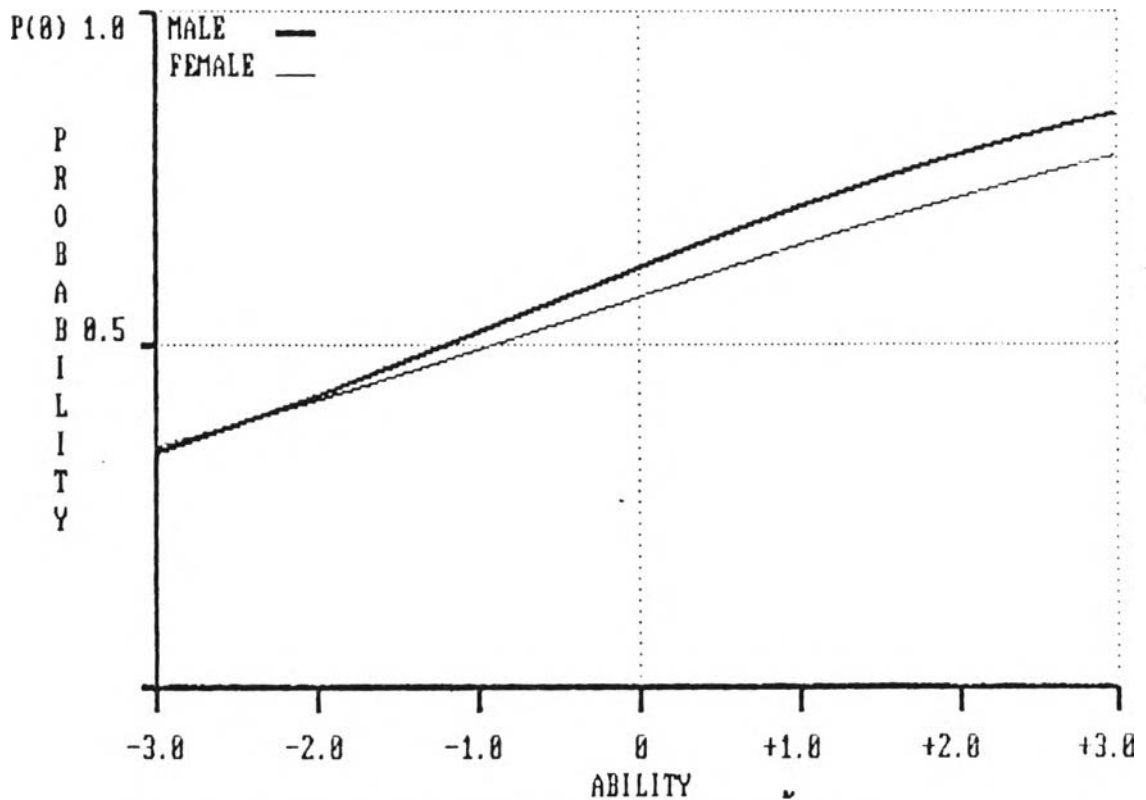


FIGURE 216 PLOT ITEM CHARACTERISTIC CURVE (item 35)



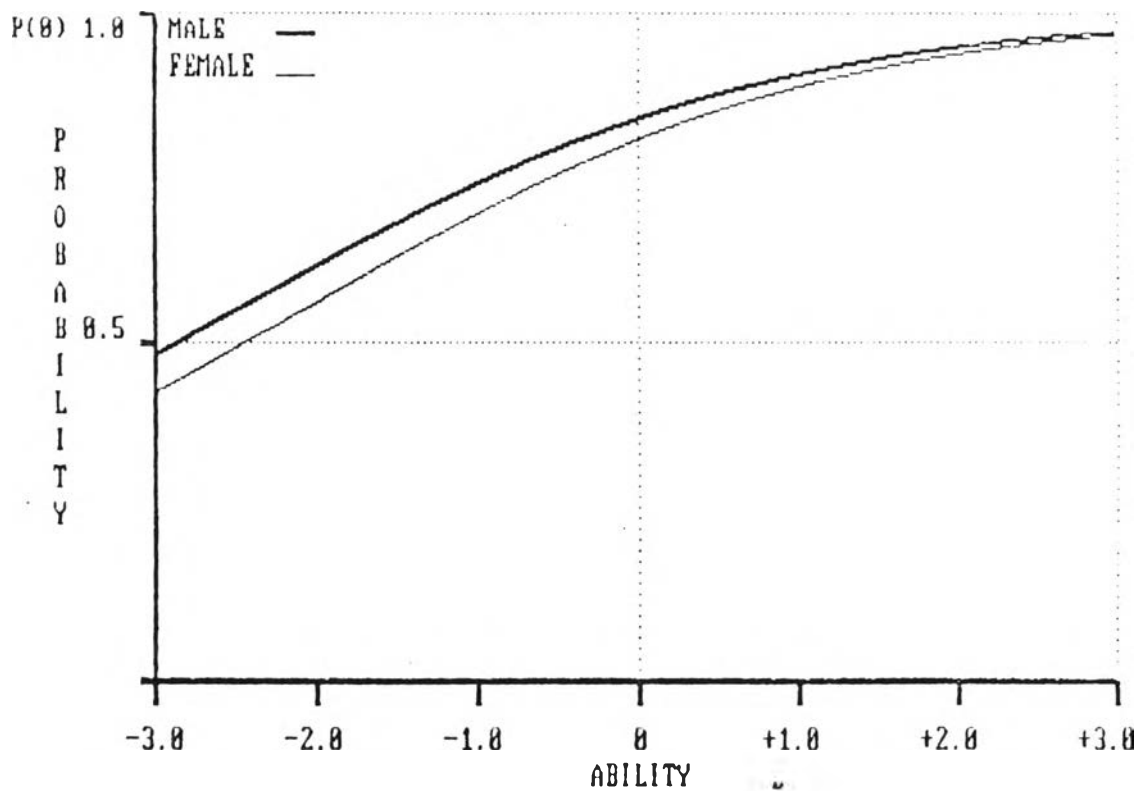


FIGURE 217 PLOT ITEM CHARACTERISTIC CURVE (no 35)

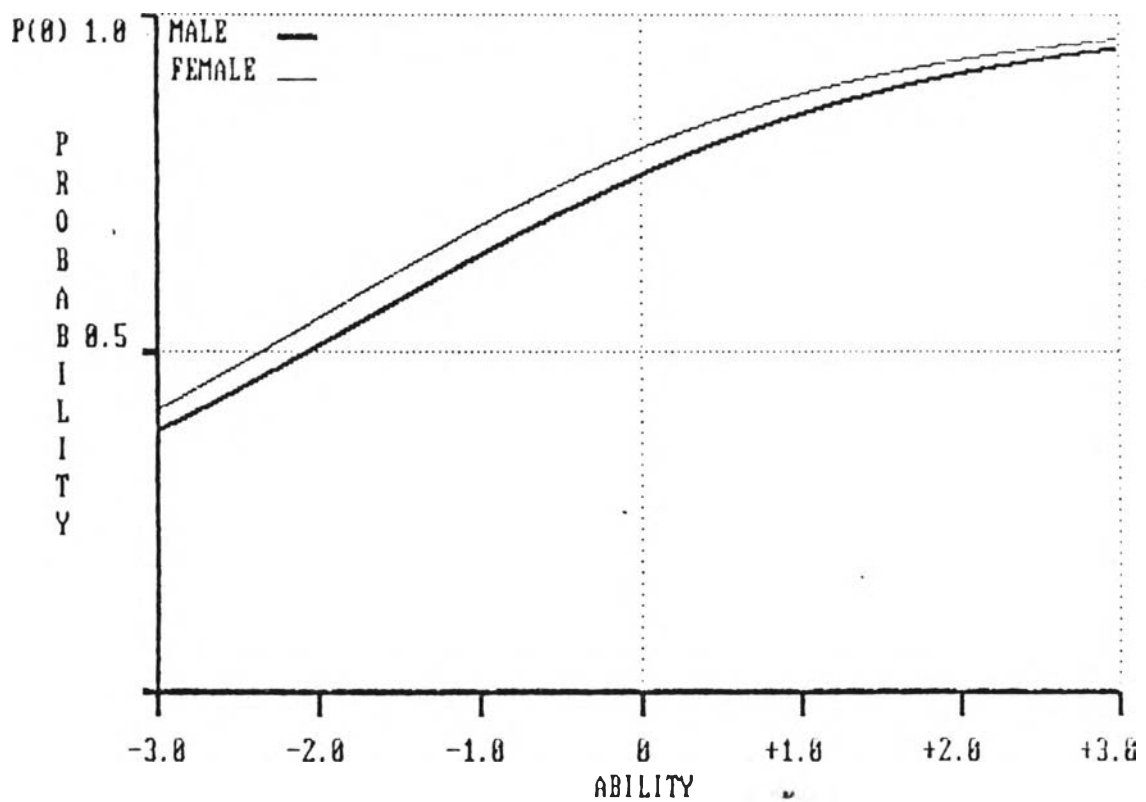


FIGURE 218 PLOT ITEM CHARACTERISTIC CURVE (no 38)

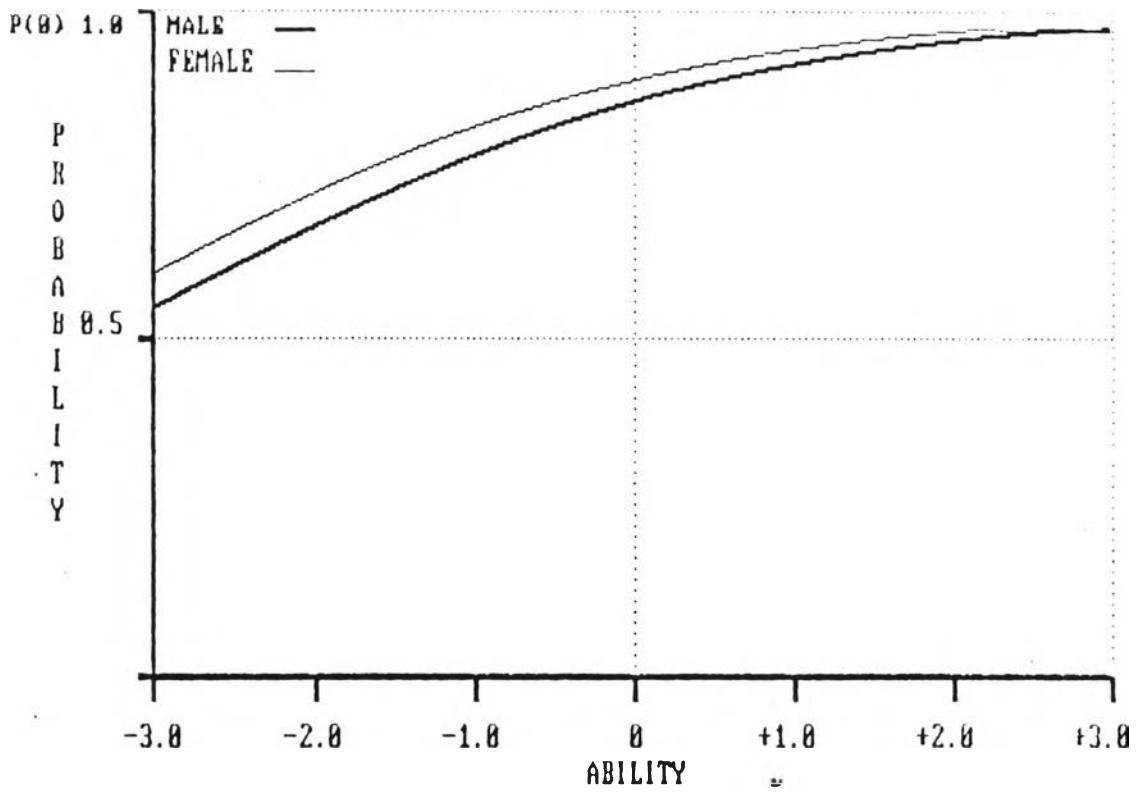


FIGURE 219 PLOT ITEM CHARACTERISTIC CURVE (ID 40)

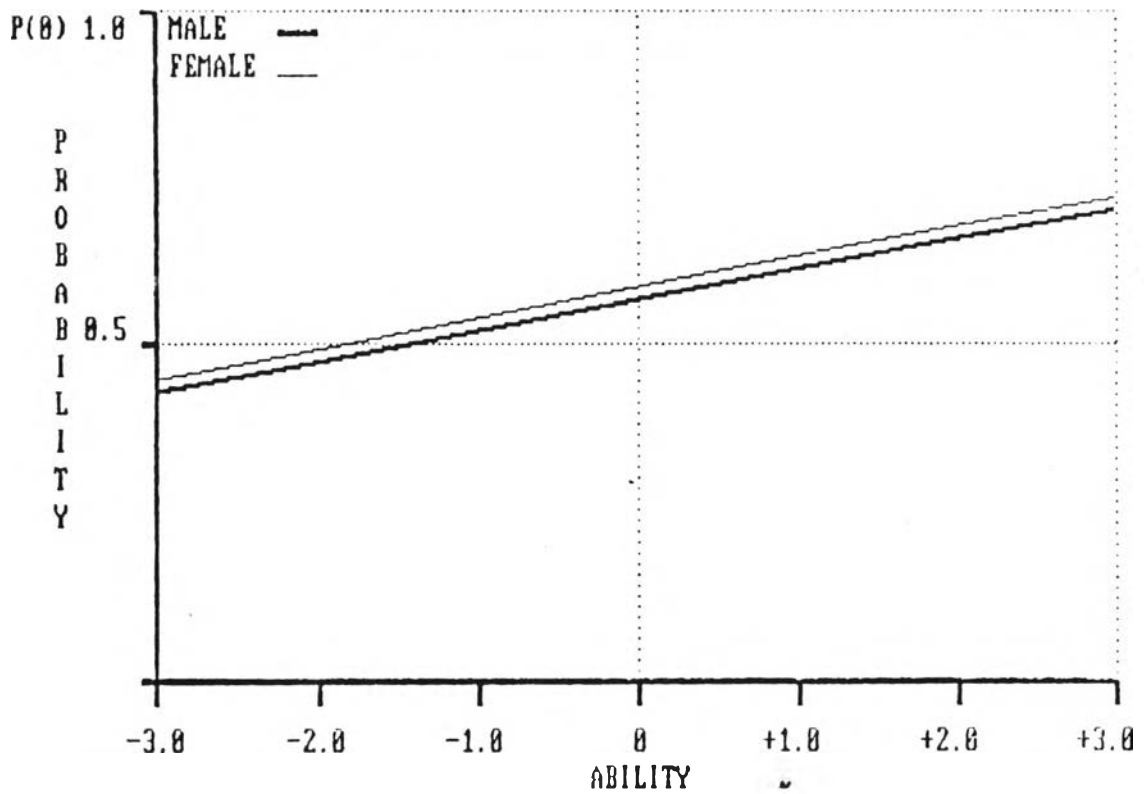


FIGURE 220 PLOT ITEM CHARACTERISTIC CURVE (ID 41)

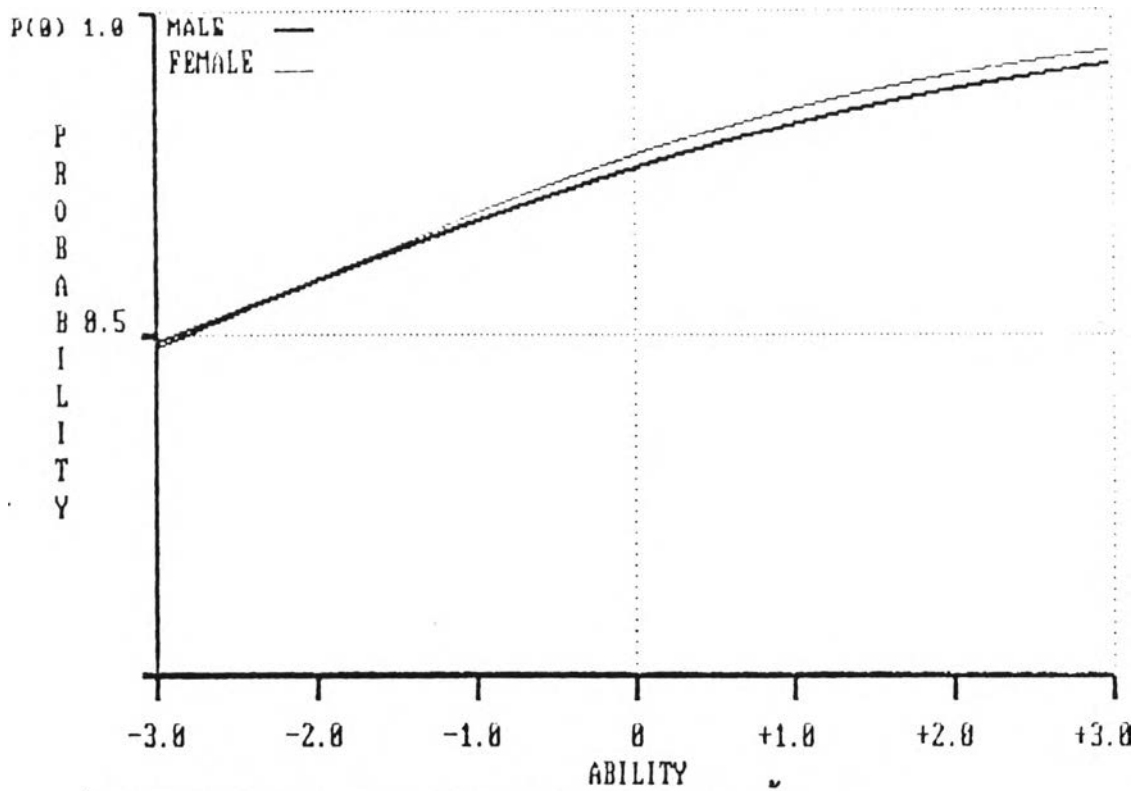


FIGURE 221 PLOT ITEM CHARACTERISTIC CURVE (no 44)

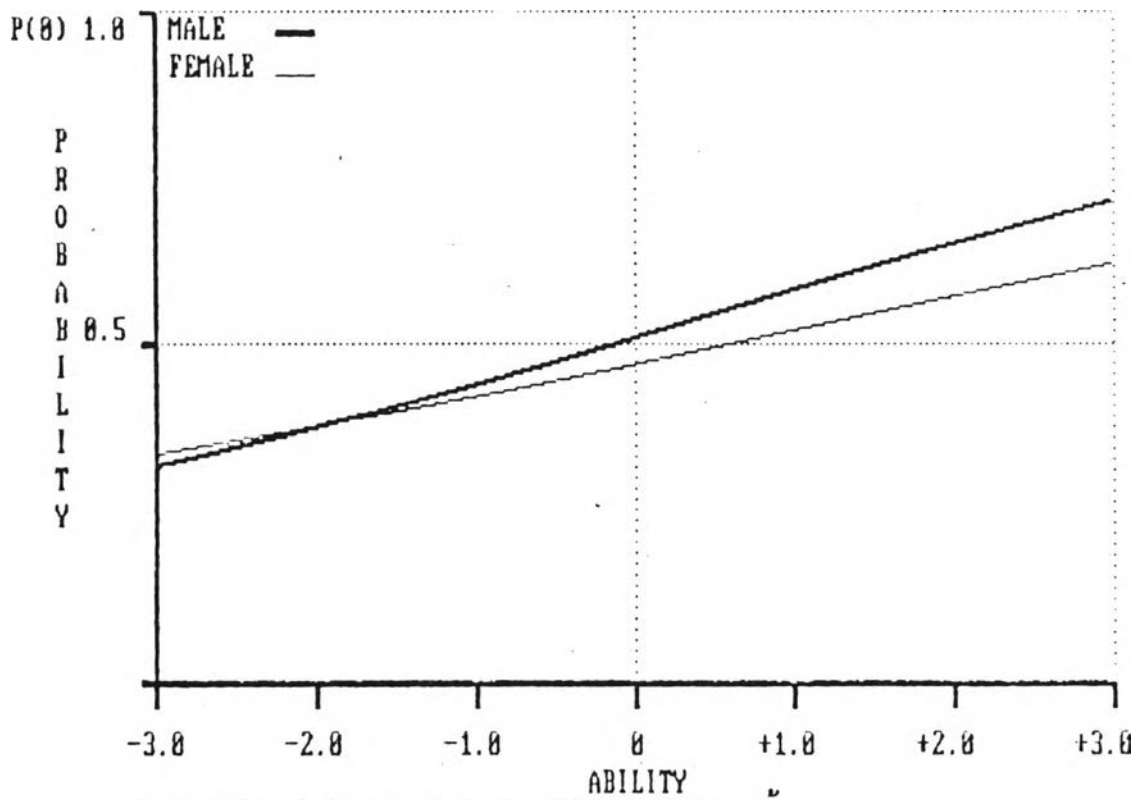


FIGURE 222 PLOT ITEM CHARACTERISTIC CURVE (no 48)

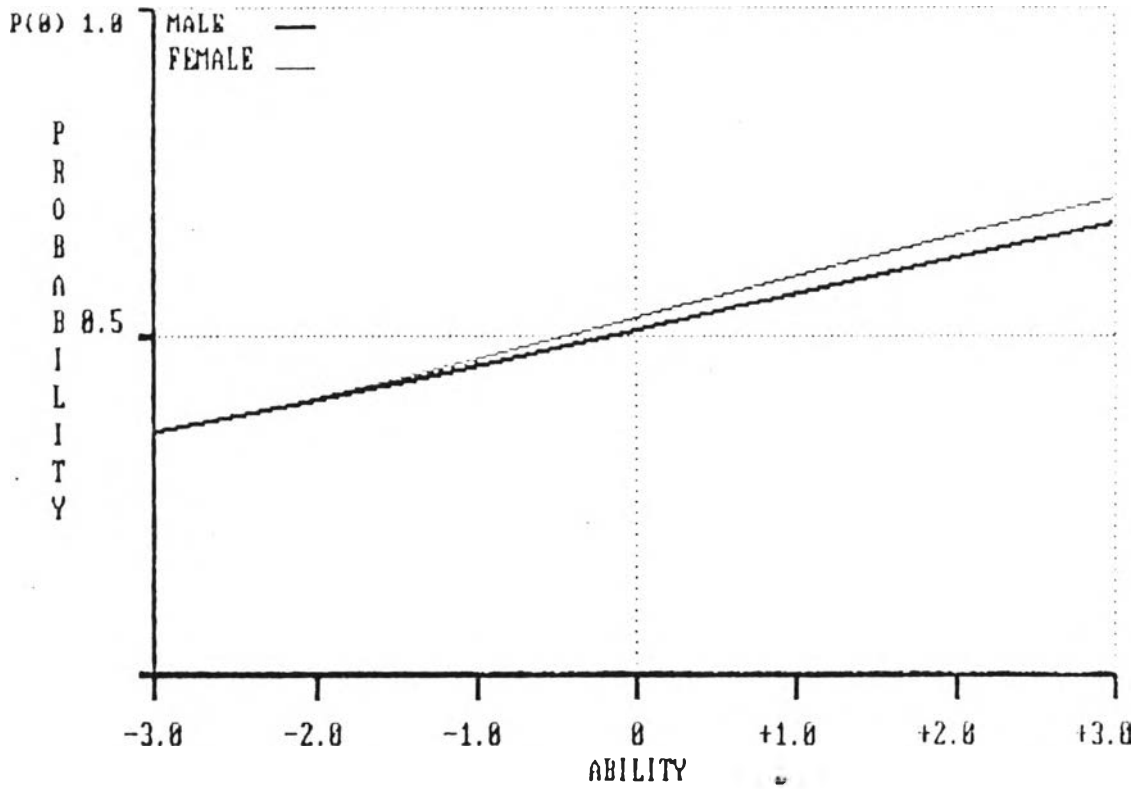


FIGURE 223 PLOT ITEM CHARACTERISTIC CURVE (no 50)

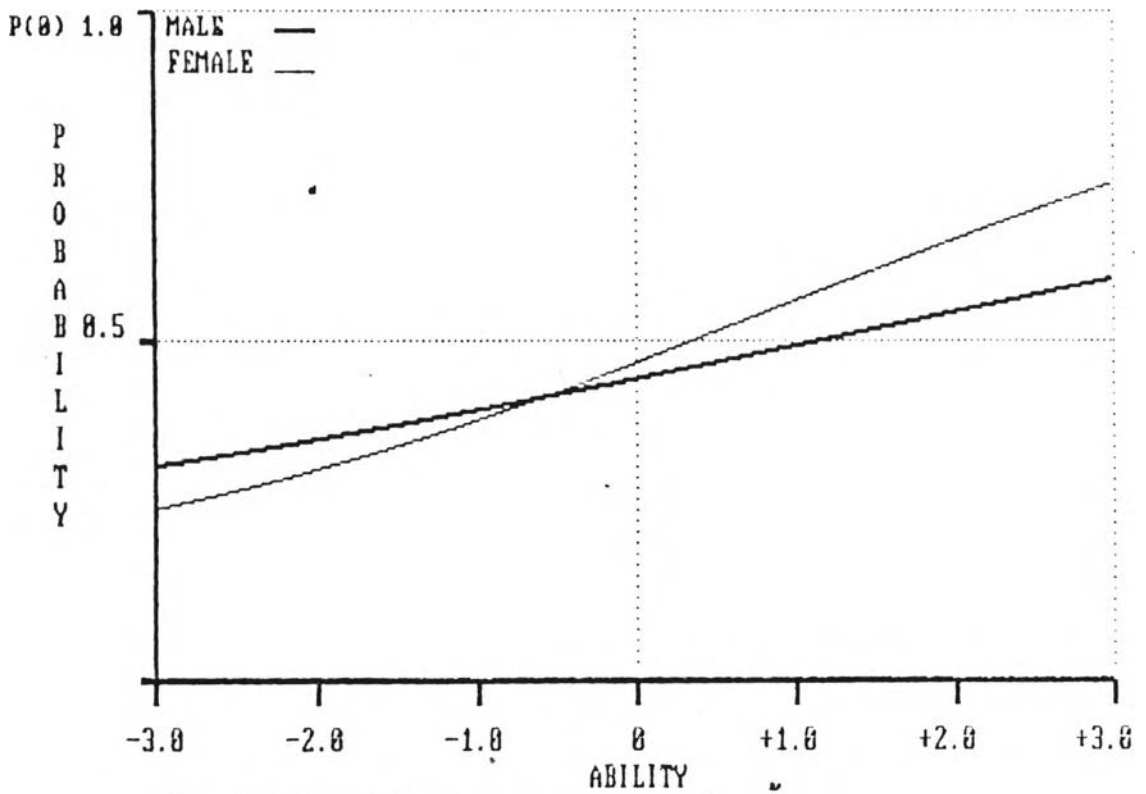
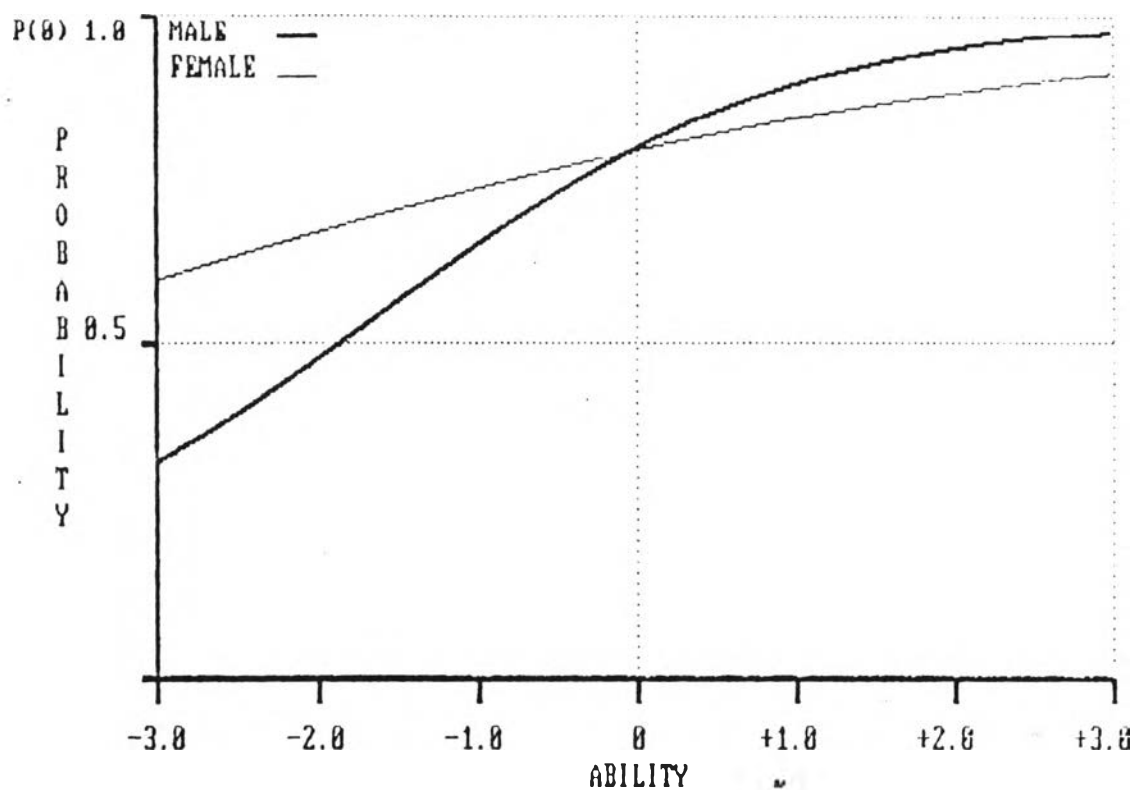
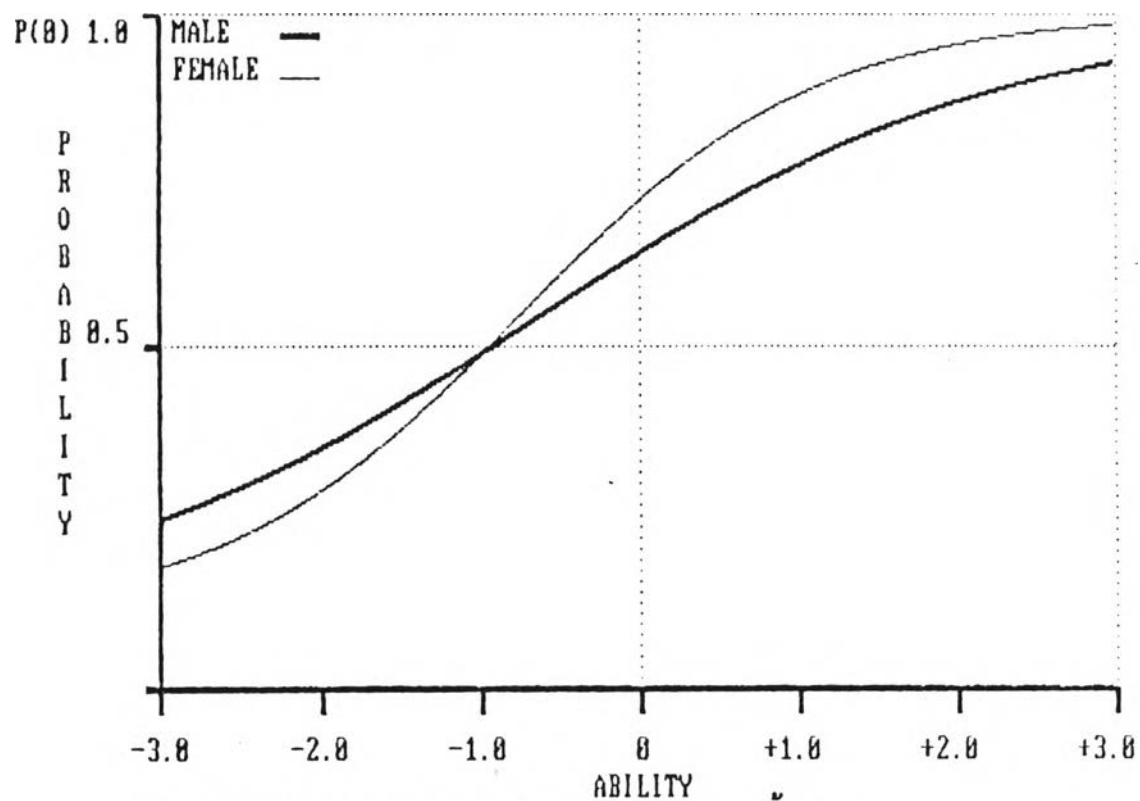


FIGURE 224 PLOT ITEM CHARACTERISTIC CURVE (no 51)

FIGURE 225 PLOT ITEM CHARACTERISTIC CURVE ( $n=52$ )FIGURE 226 PLOT ITEM CHARACTERISTIC CURVE ( $n=53$ )

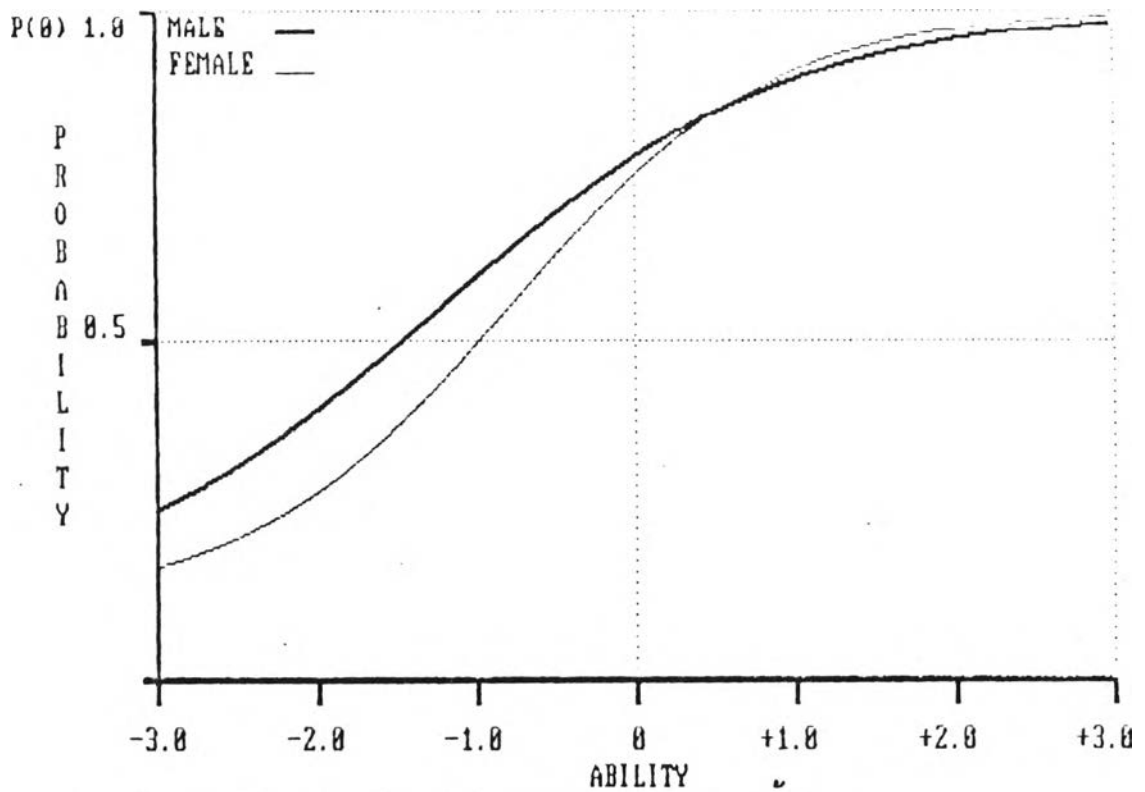


FIGURE 227 PLOT ITEM CHARACTERISTIC CURVE (no 56)

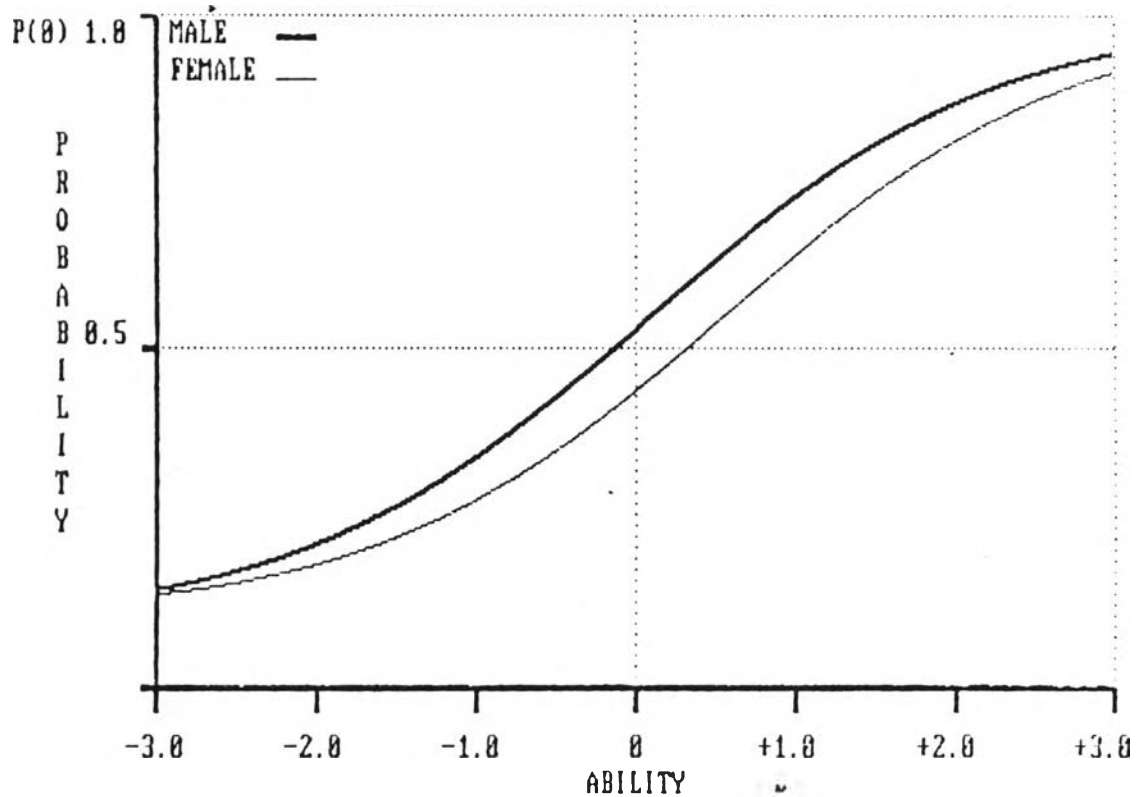


FIGURE 228 PLOT ITEM CHARACTERISTIC CURVE (no 57)

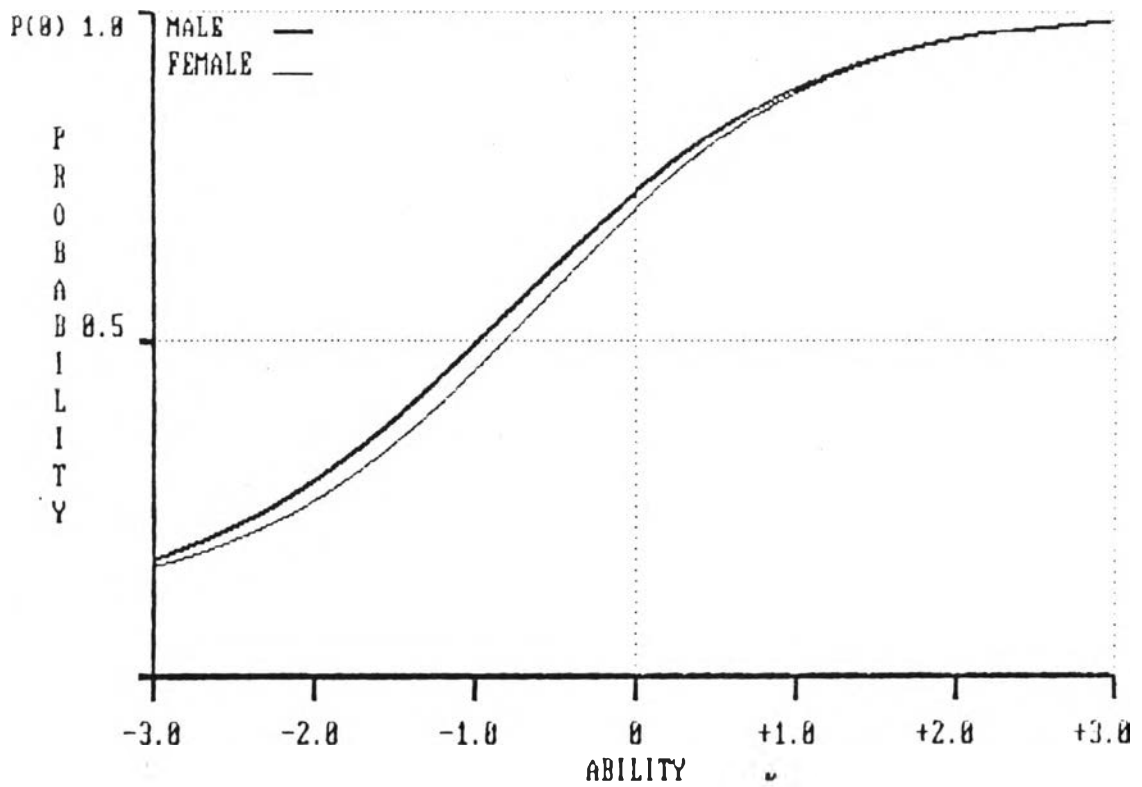


FIGURE 229 PLOT ITEM CHARACTERISTIC CURVE (No. 58)

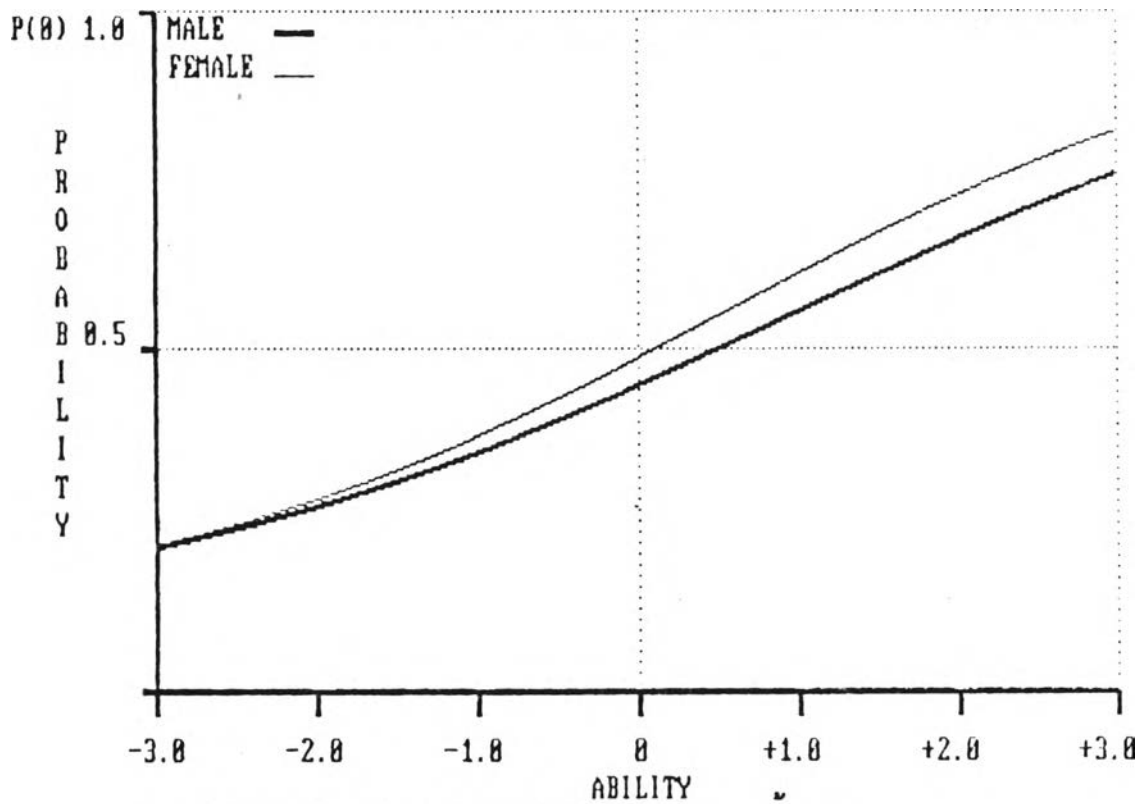


FIGURE 230 PLOT ITEM CHARACTERISTIC CURVE (No. 59)

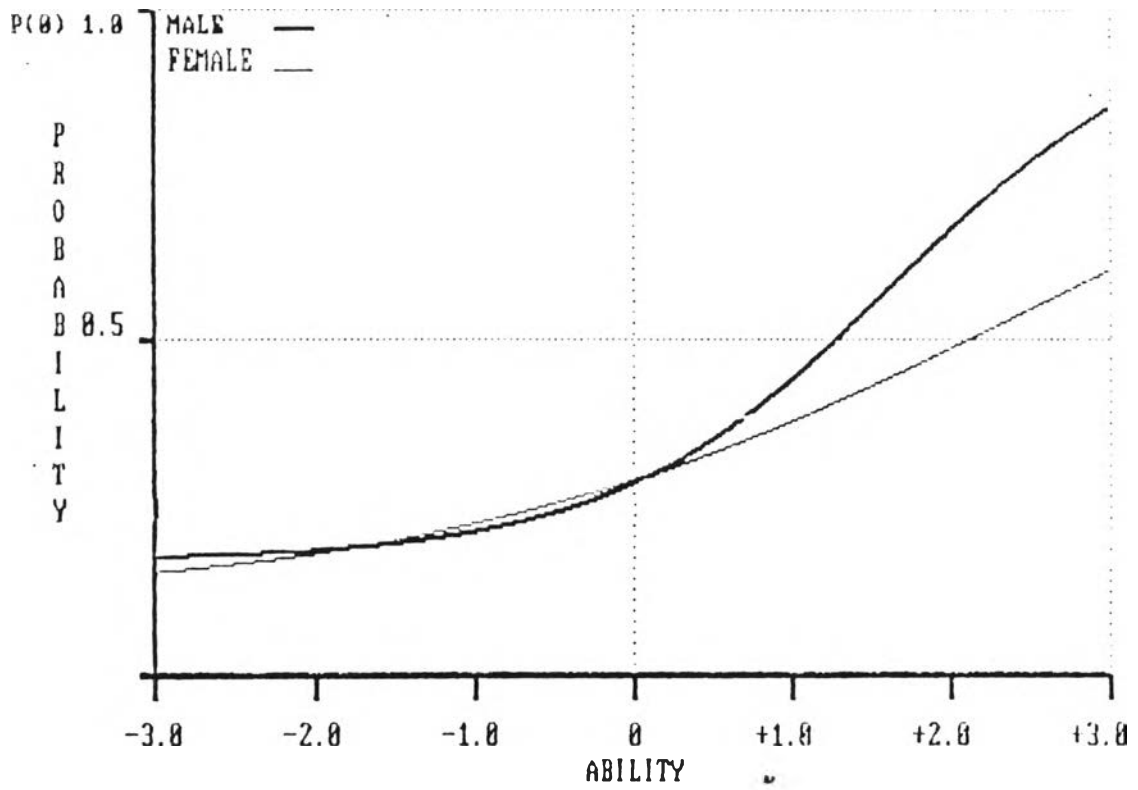


FIGURE 231 PLOT ITEM CHARACTERISTIC CURVE (no 60)

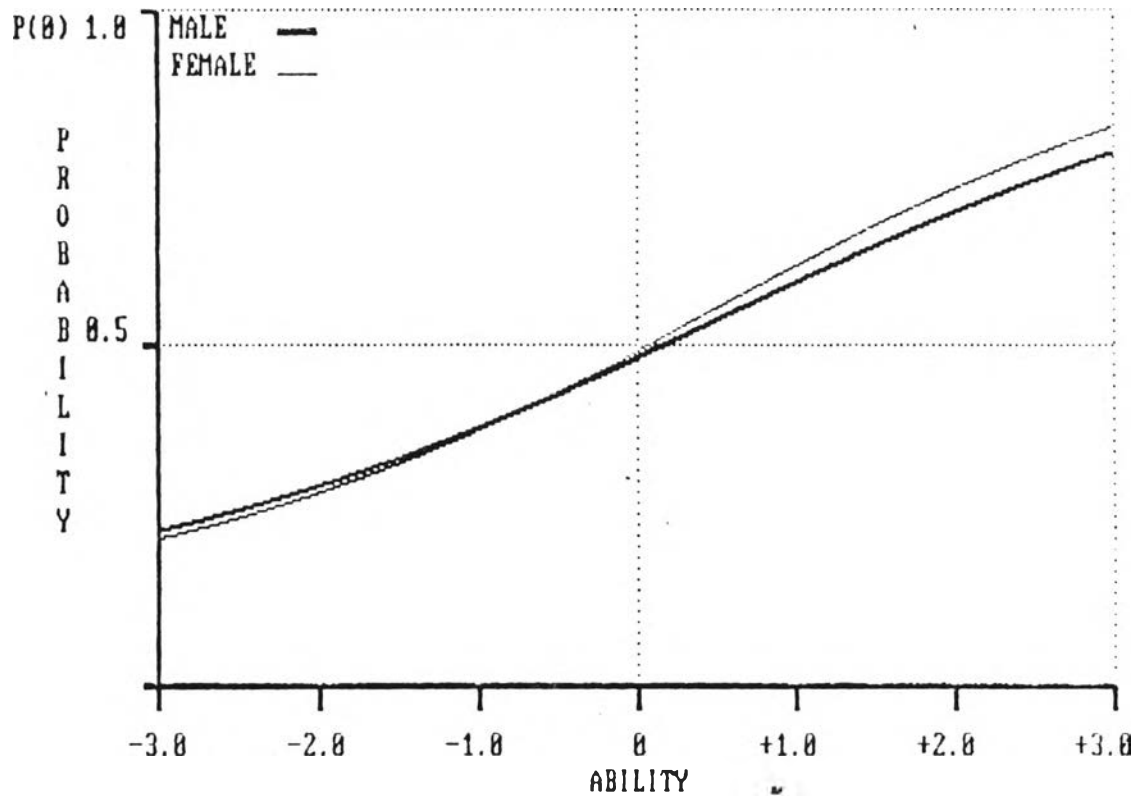


FIGURE 232 PLOT ITEM CHARACTERISTIC CURVE (no 61)



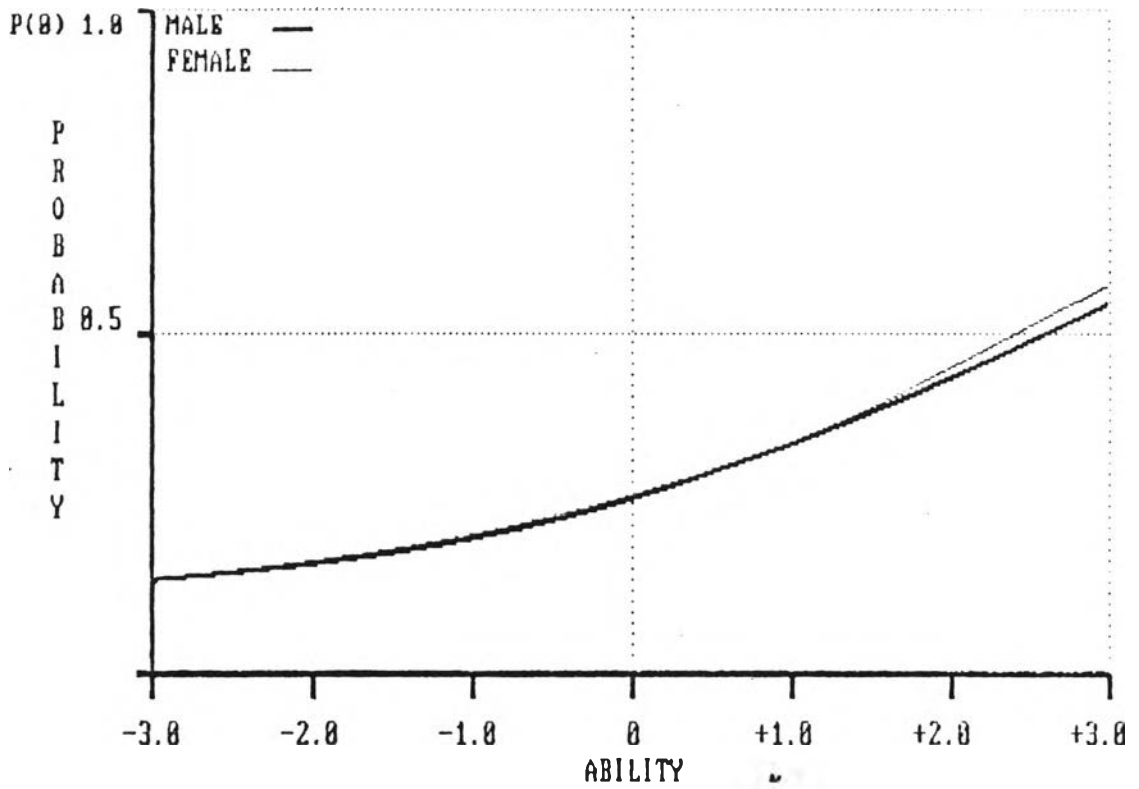


FIGURE 233 PLOT ITEM CHARACTERISTIC CURVE (Item 62)

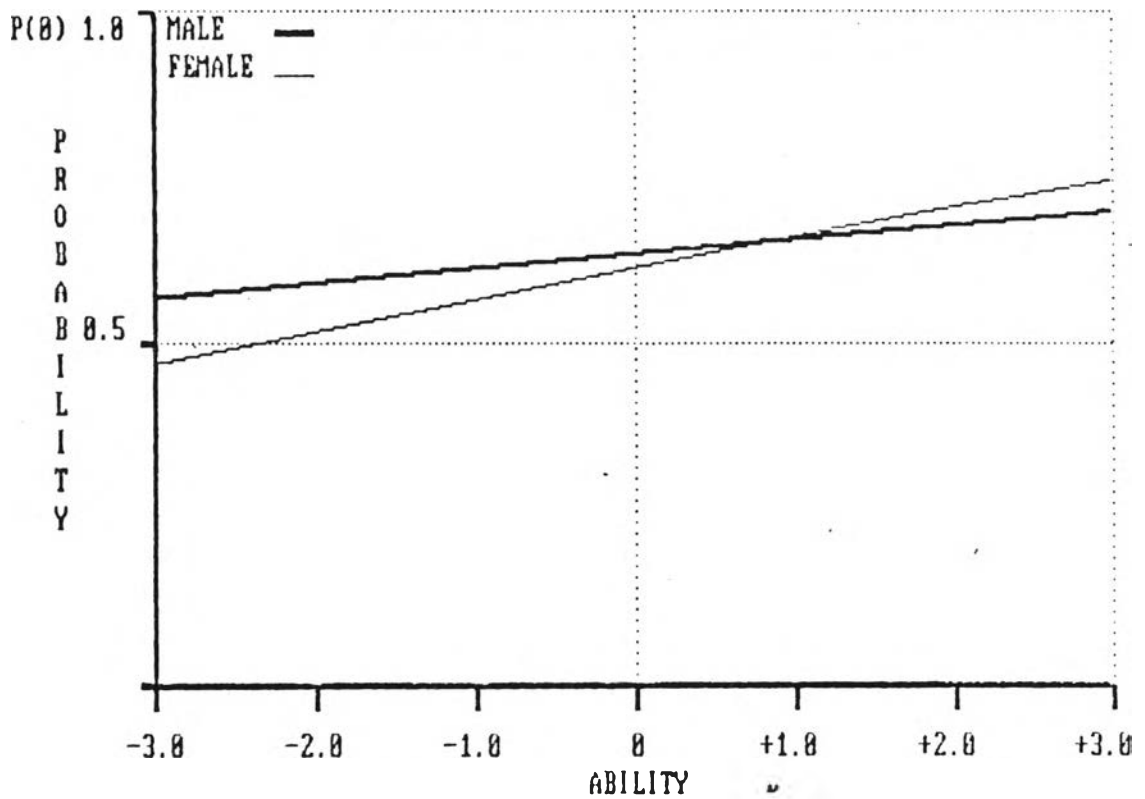


FIGURE 234 PLOT ITEM CHARACTERISTIC CURVE (Item 63)

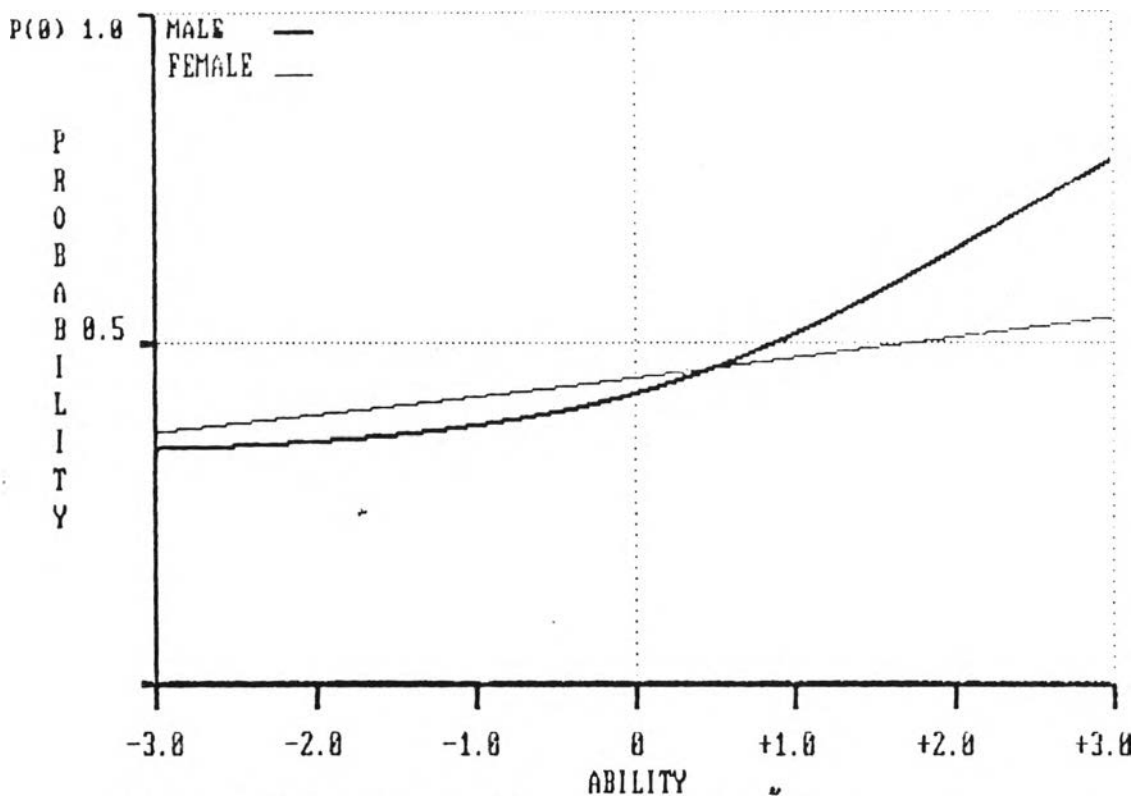


FIGURE 235 PLOT ITEM CHARACTERISTIC CURVE (ID 64)

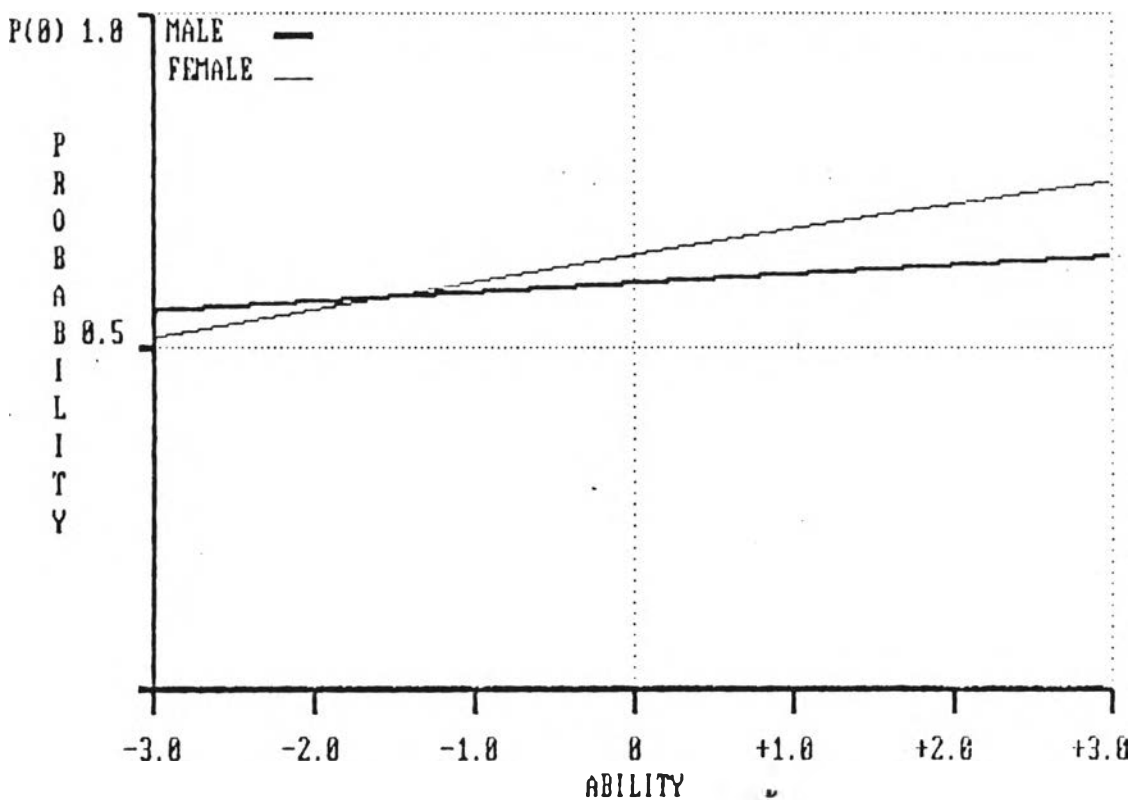


FIGURE 236 PLOT ITEM CHARACTERISTIC CURVE (ID 65)

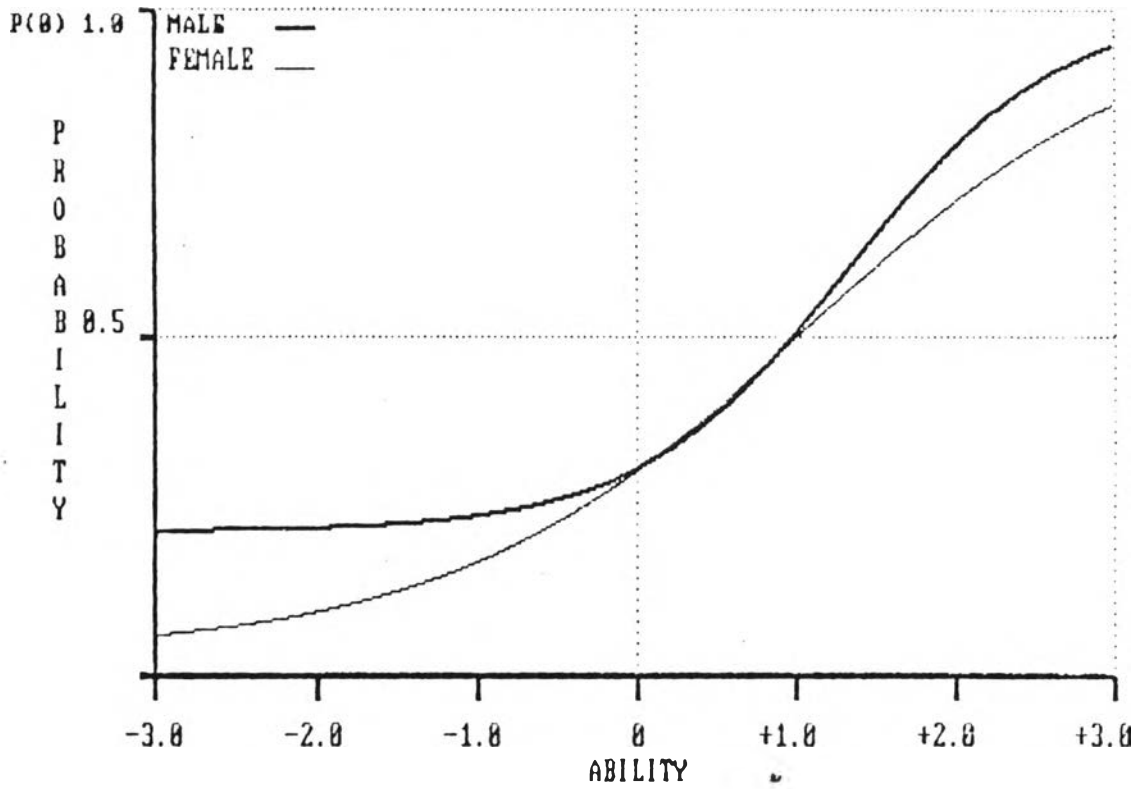


FIGURE 237 PLOT ITEM CHARACTERISTIC CURVE (ID 66)

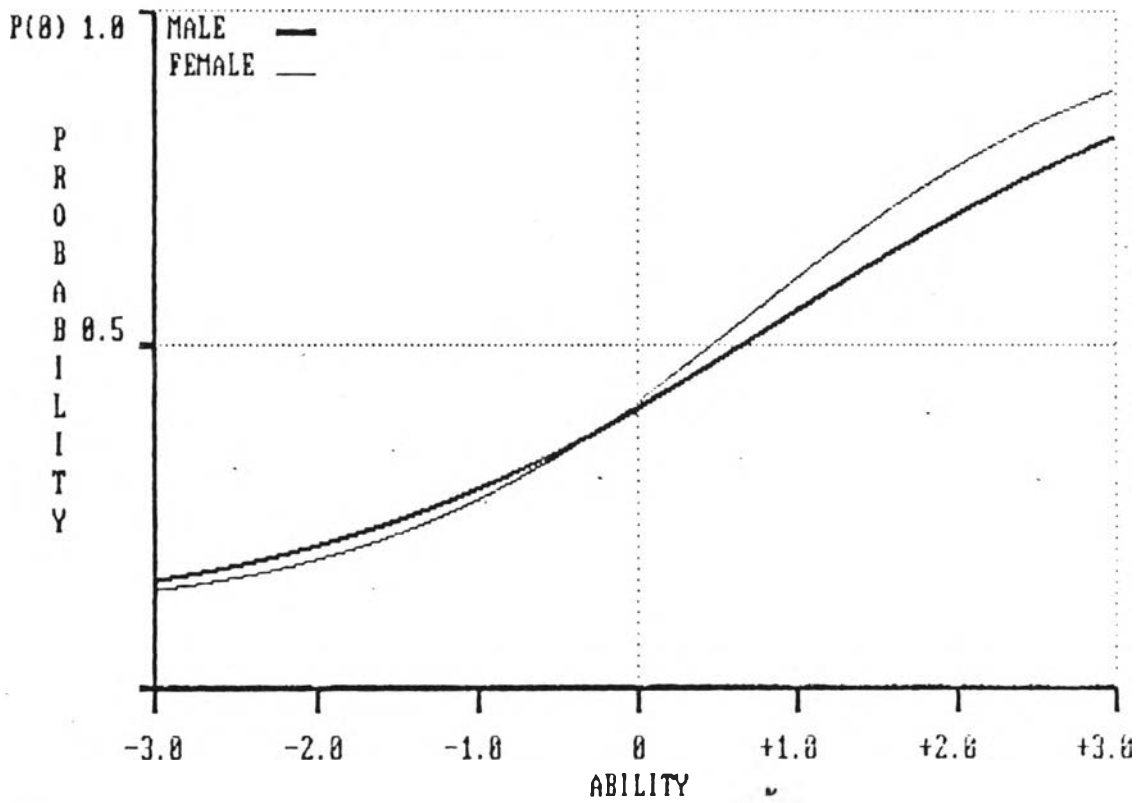


FIGURE 238 PLOT ITEM CHARACTERISTIC CURVE (ID 67)

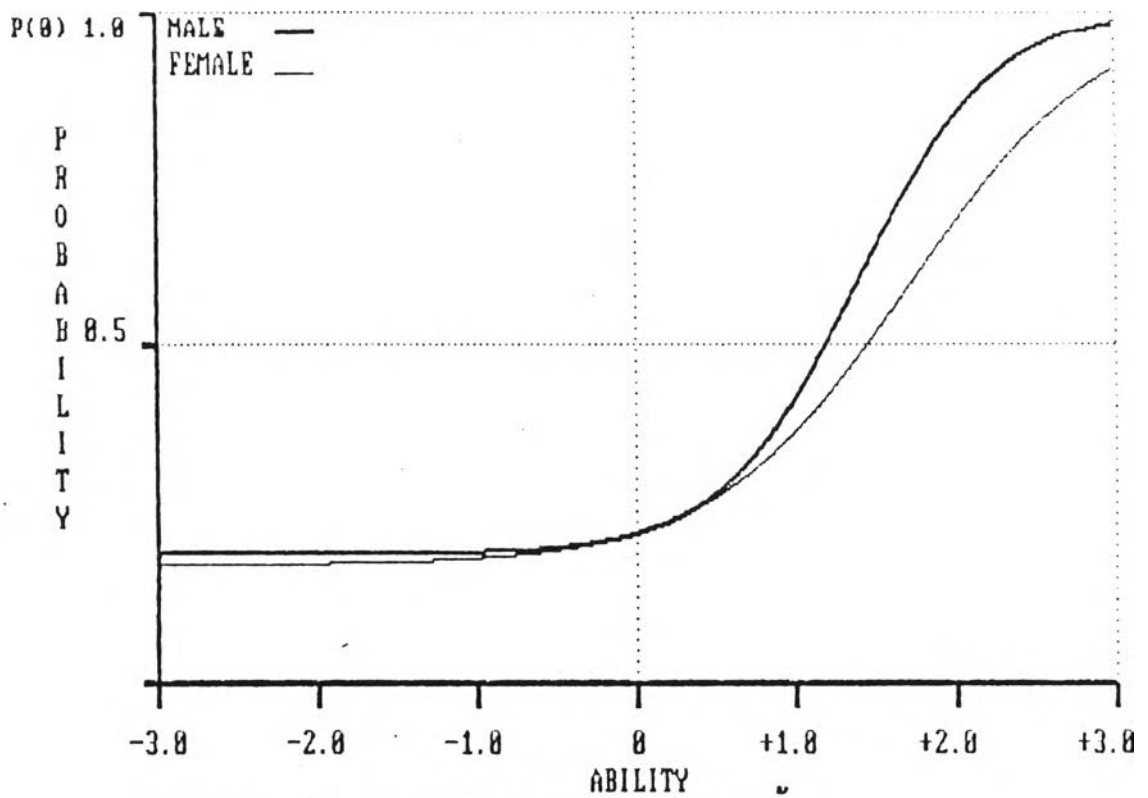


FIGURE 239 PLOT ITEM CHARACTERISTIC CURVE (ID 69)

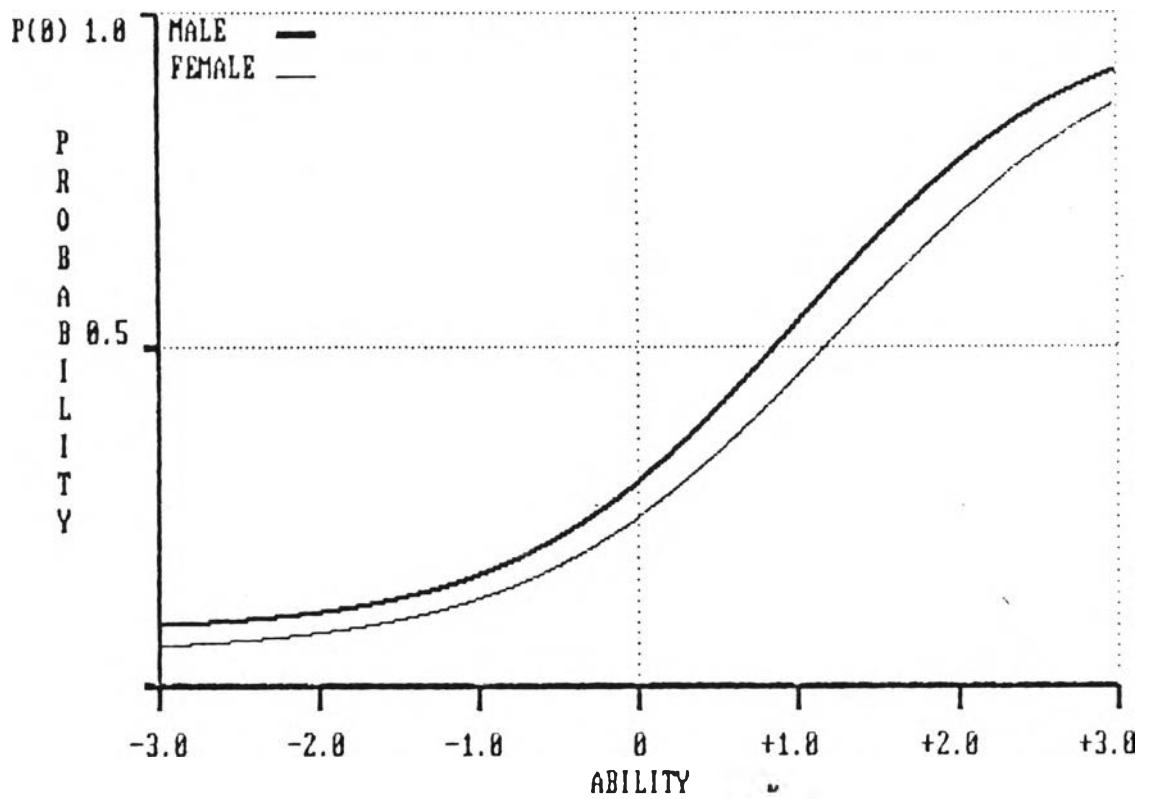


FIGURE 240 PLOT ITEM CHARACTERISTIC CURVE (ID 71)

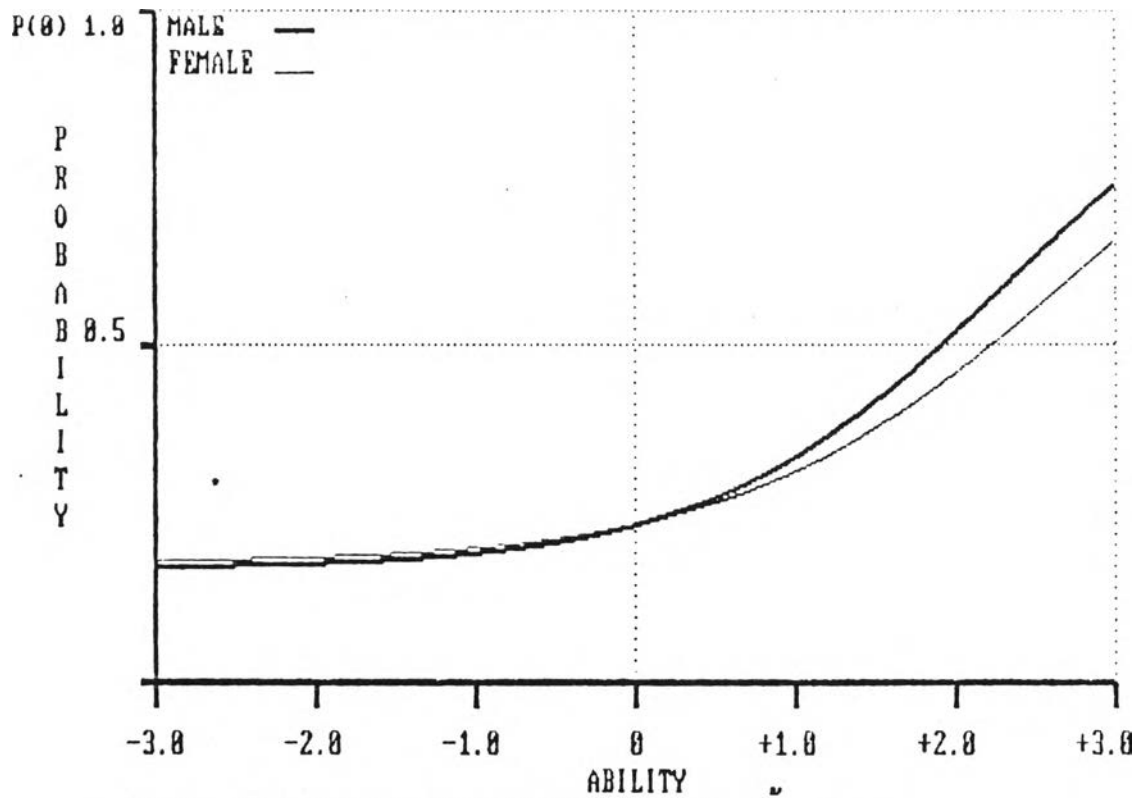


FIGURE 241 PLOT ITEM CHARACTERISTIC CURVE (no 72)

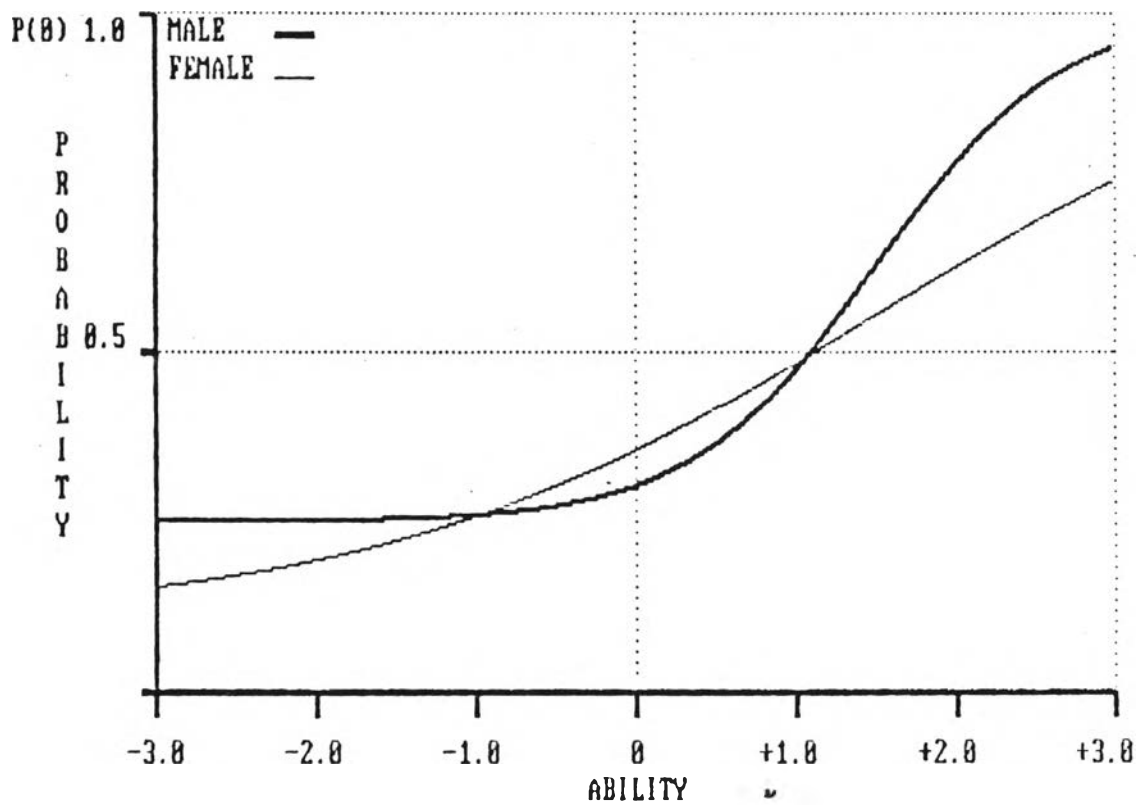


FIGURE 242 PLOT ITEM CHARACTERISTIC CURVE (no 73)

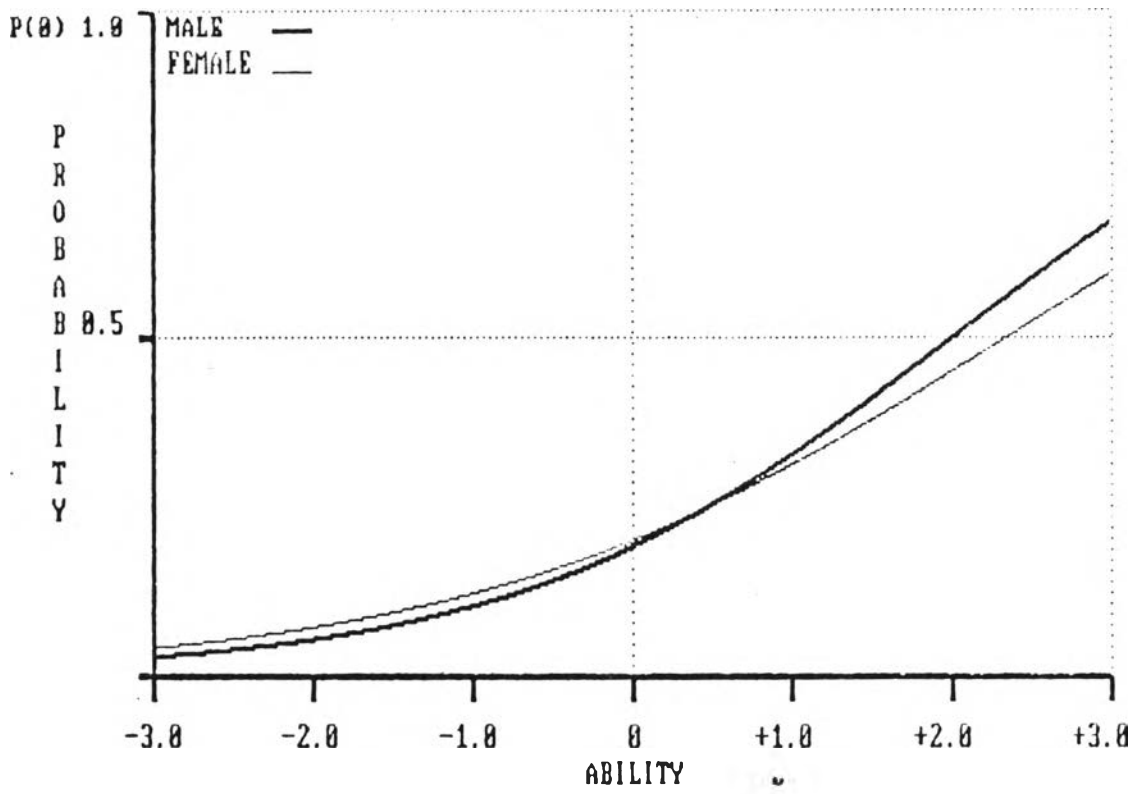


FIGURE 243 PLOT ITEM CHARACTERISTIC CURVE (ID 75)

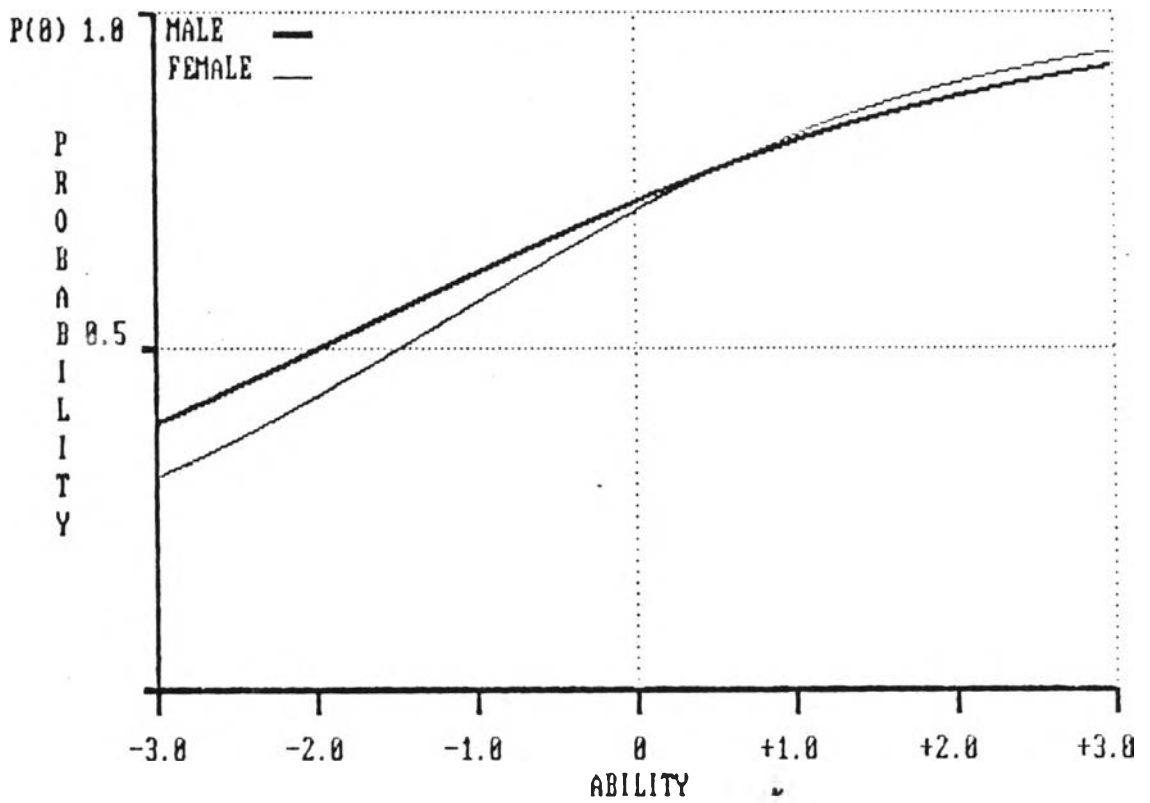


FIGURE 244 PLOT ITEM CHARACTERISTIC CURVE (ID 76)

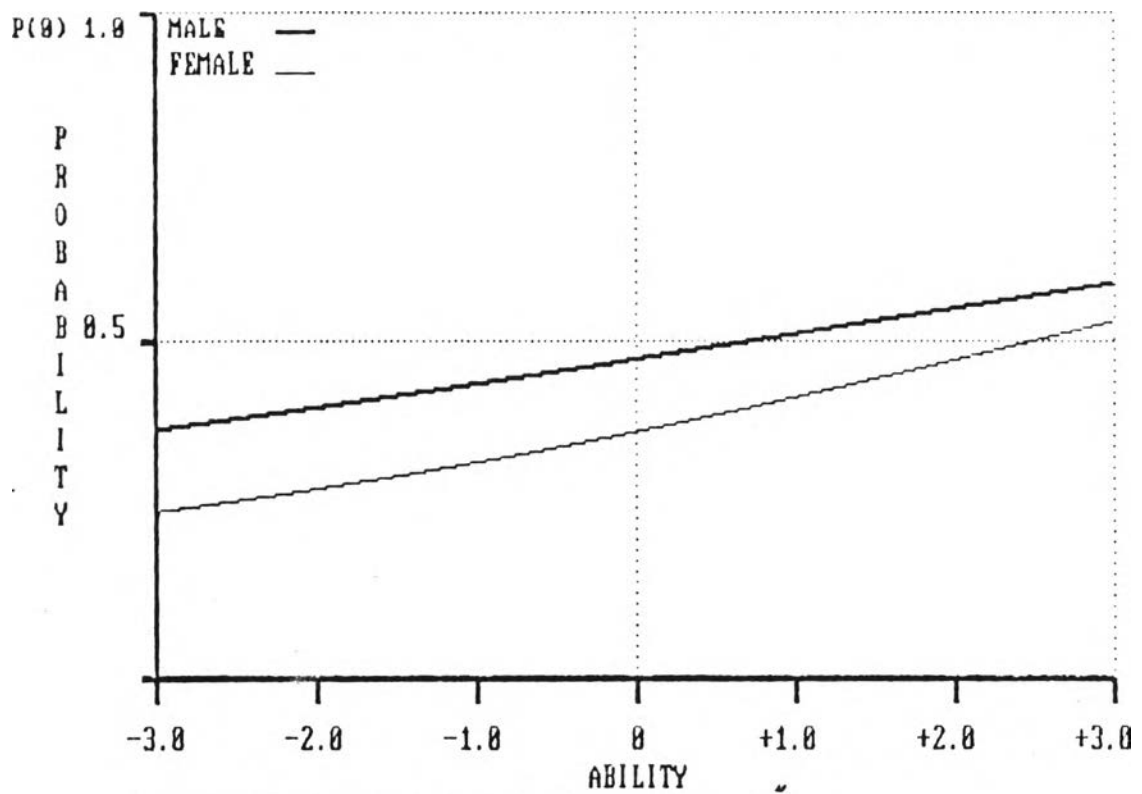


FIGURE 245 PLOT ITEM CHARACTERISTIC CURVE (ID 77)

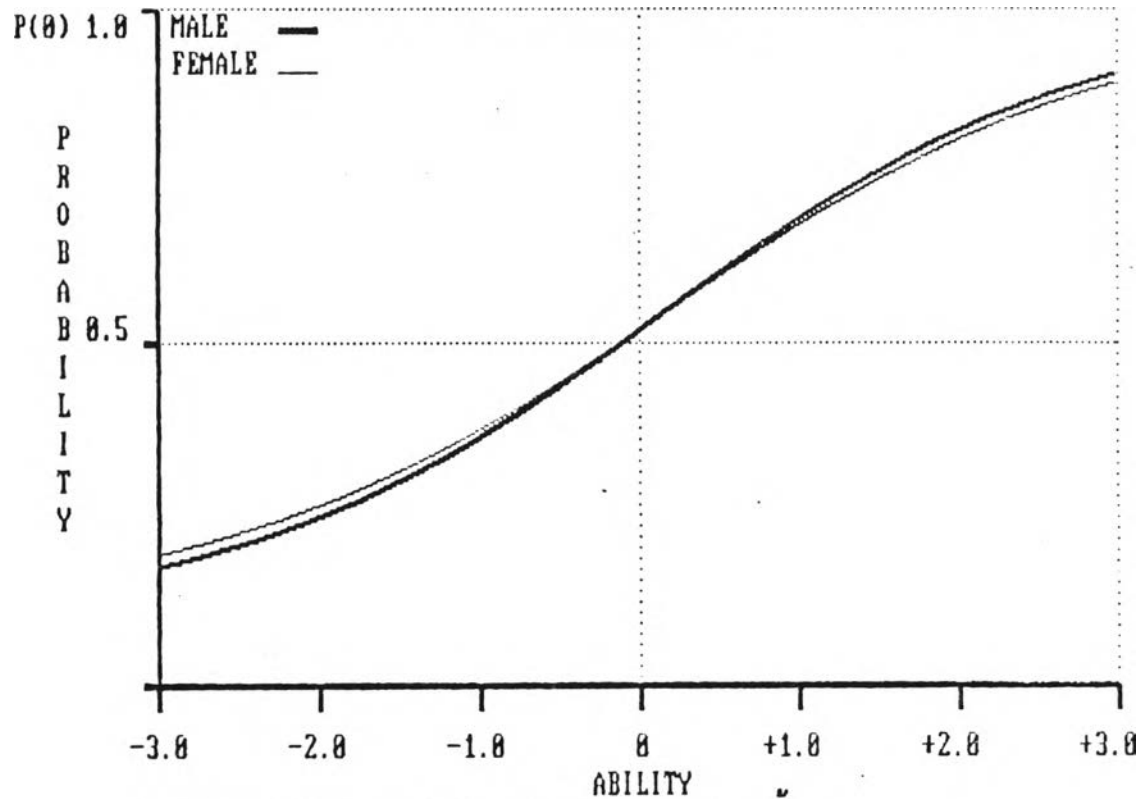


FIGURE 246 PLOT ITEM CHARACTERISTIC CURVE (ID 79)

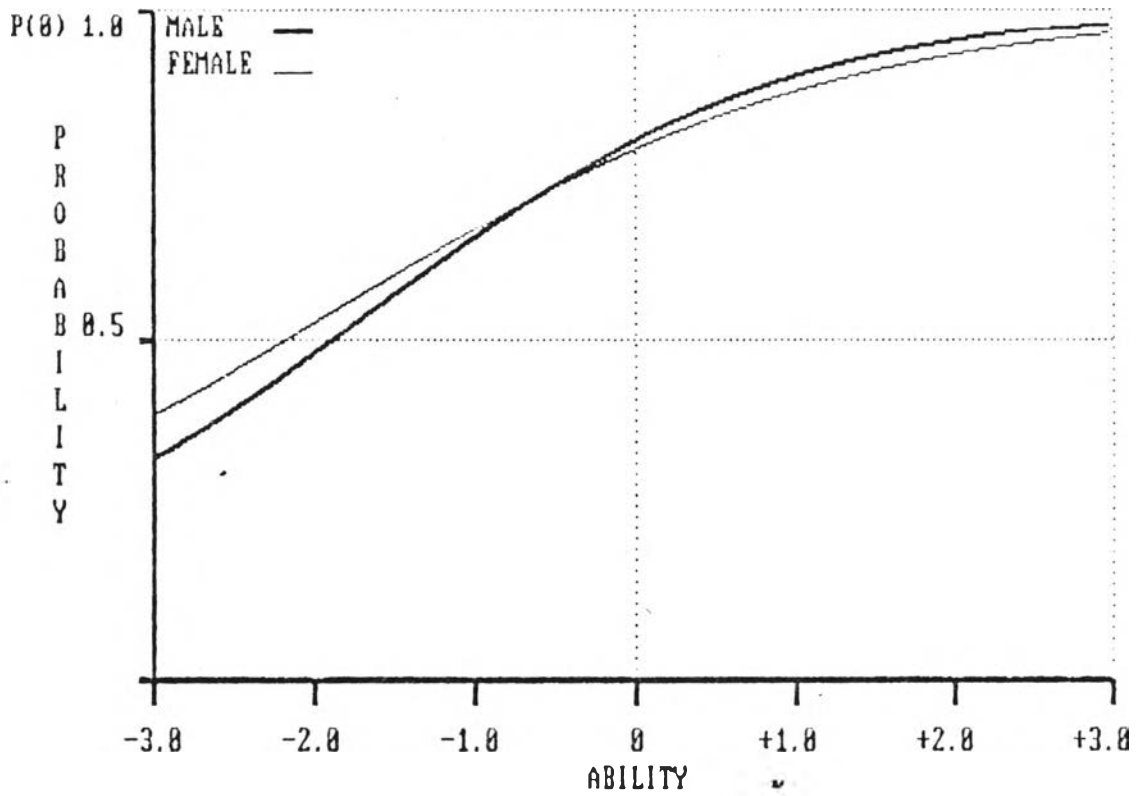


FIGURE 247 PLOT ITEM CHARACTERISTIC CURVE (2080)

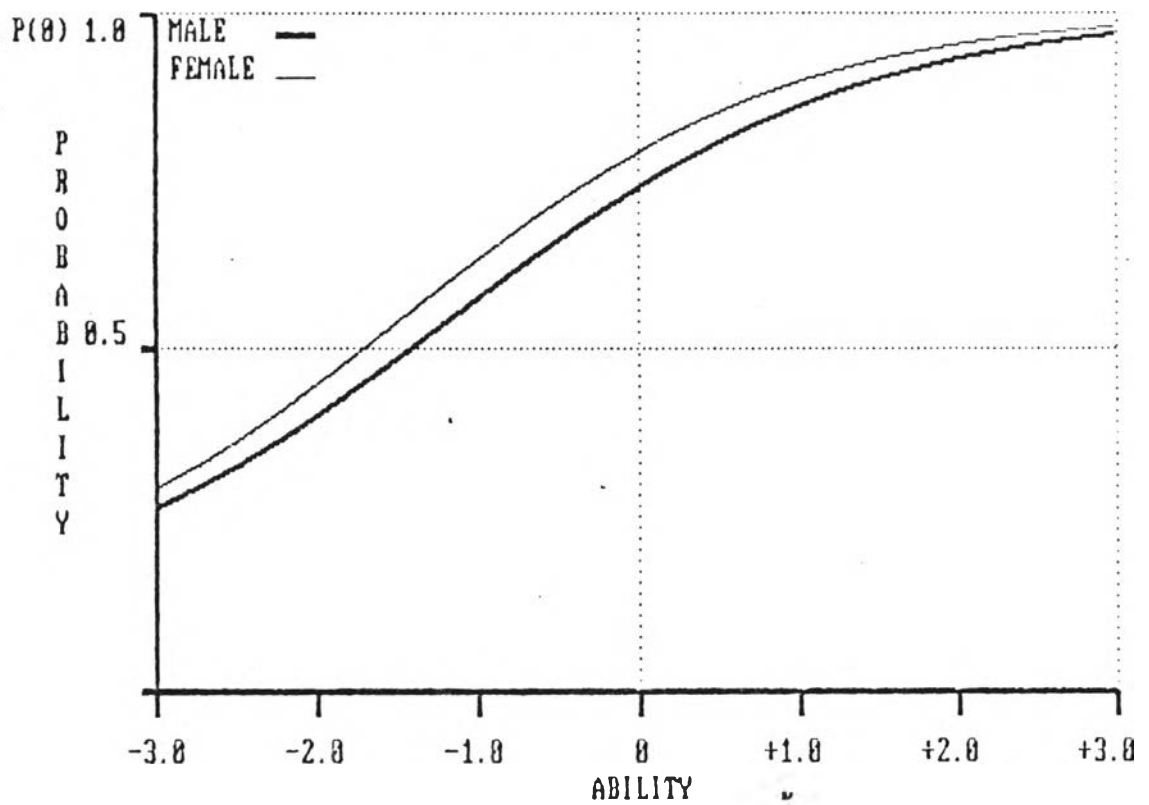


FIGURE 248 PLOT ITEM CHARACTERISTIC CURVE (2082)



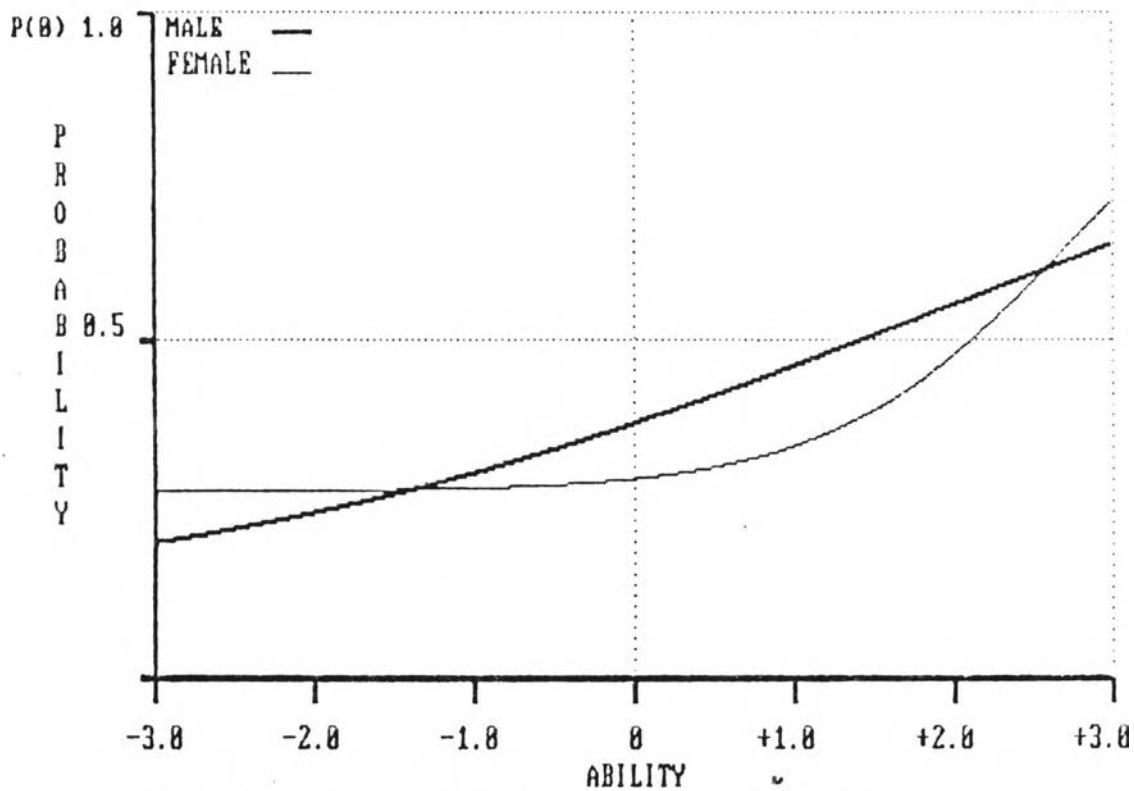


FIGURE 249 PLOT ITEM CHARACTERISTIC CURVE (ID 83)

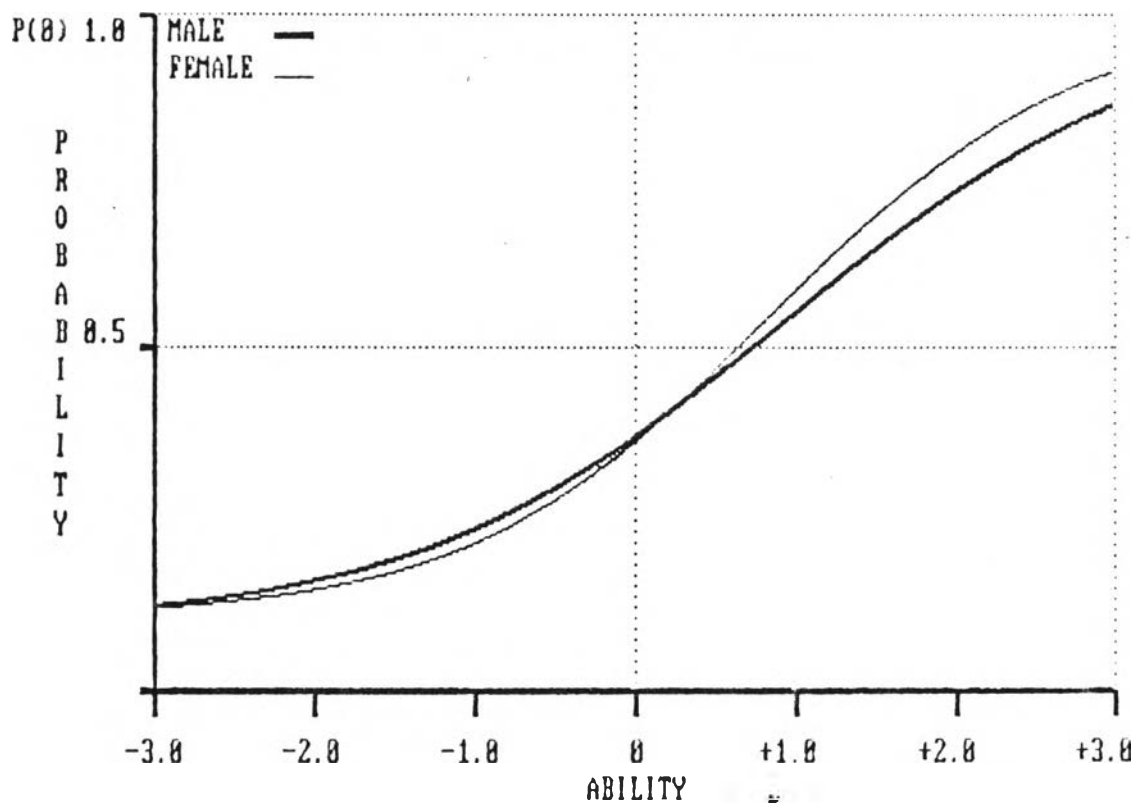


FIGURE 250 PLOT ITEM CHARACTERISTIC CURVE (ID 85)

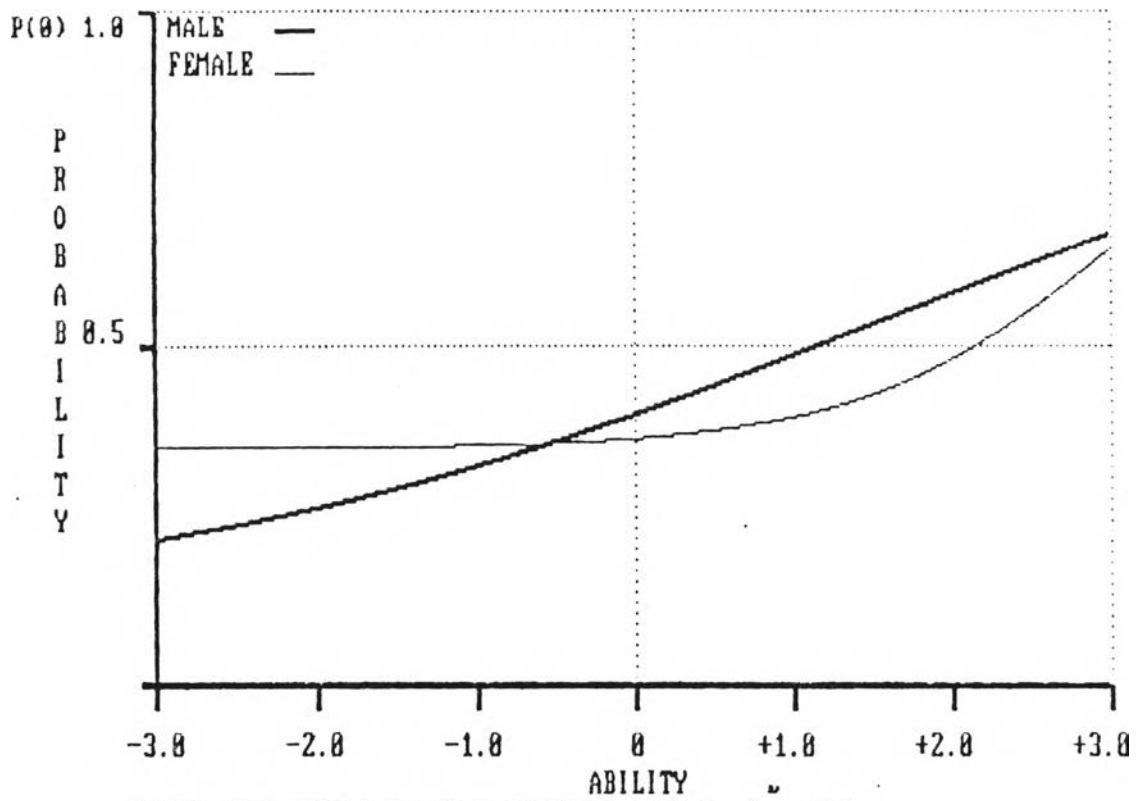


FIGURE 251 PLOT ITEM CHARACTERISTIC CURVE (7086)

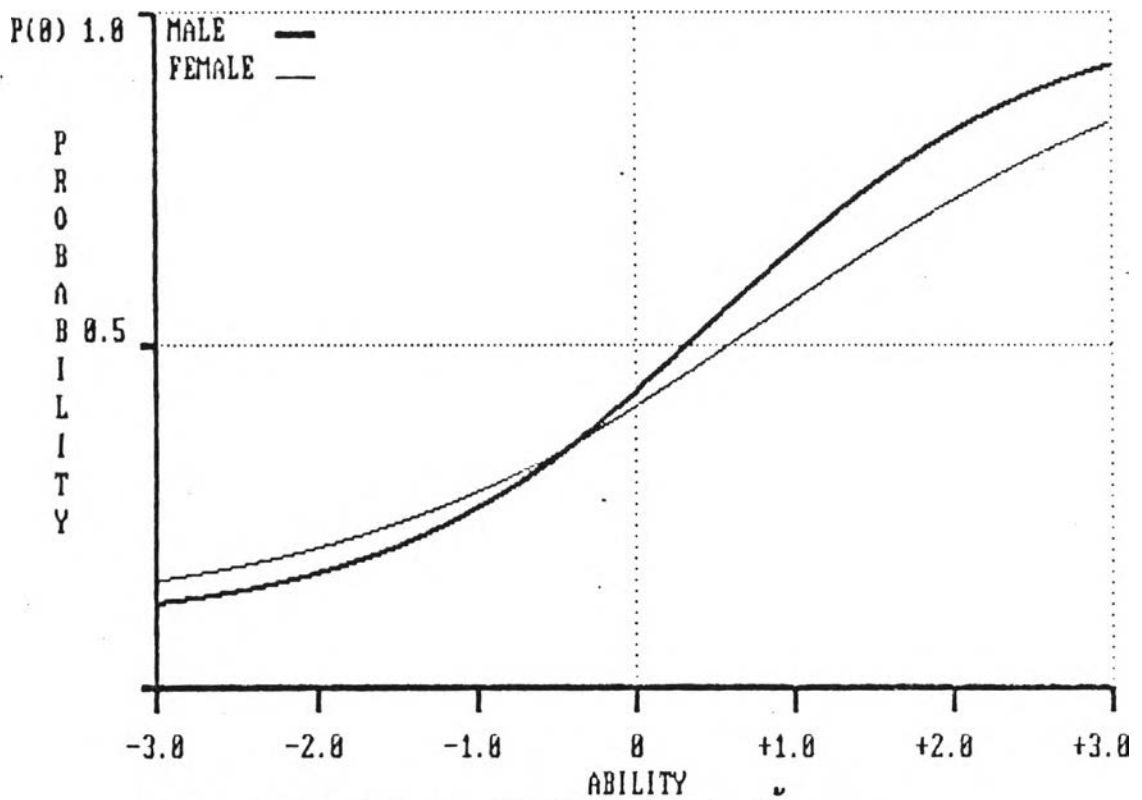


FIGURE 252 PLOT ITEM CHARACTERISTIC CURVE (7088)

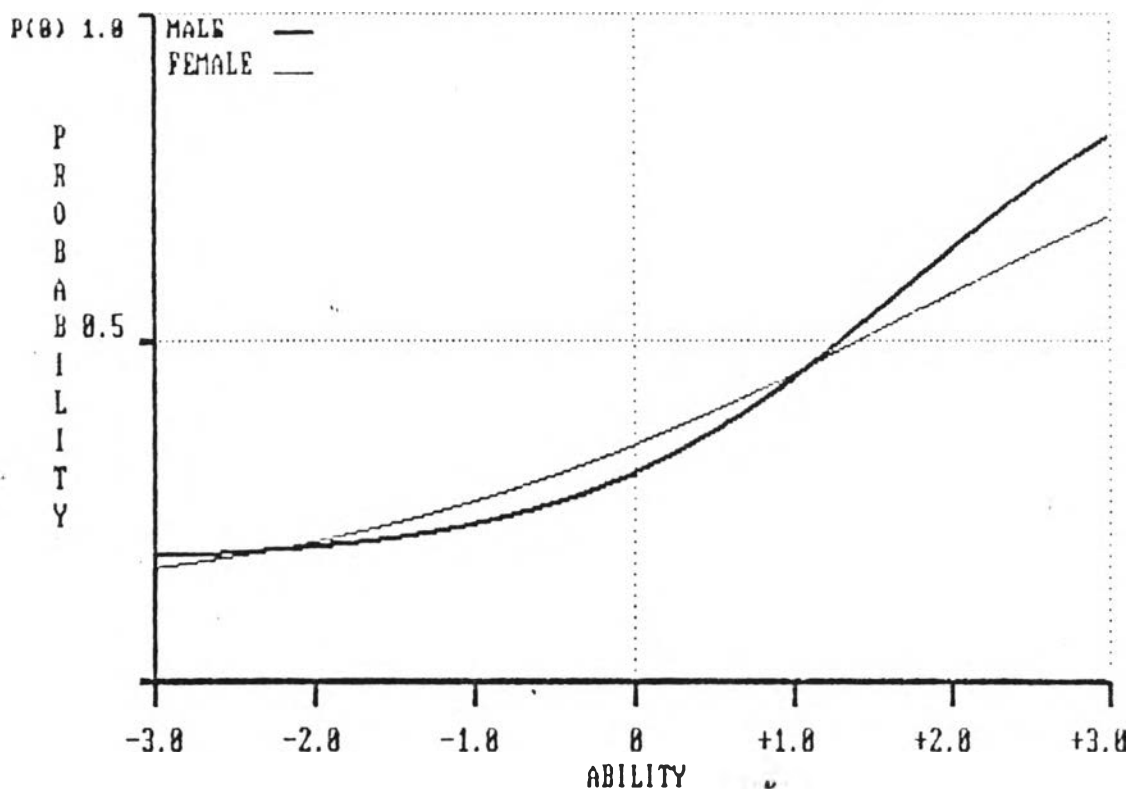


FIGURE 253 PLOT ITEM CHARACTERISTIC CURVE (p089)

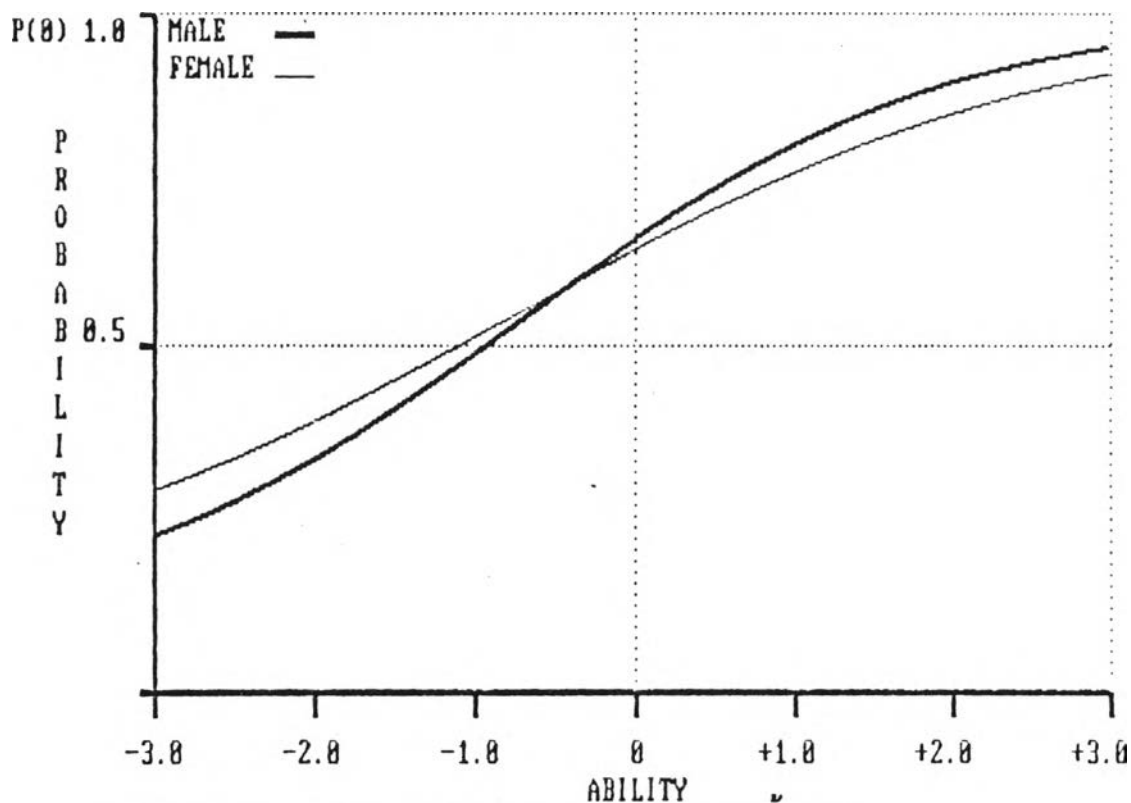


FIGURE 254 PLOT ITEM CHARACTERISTIC CURVE (p090)

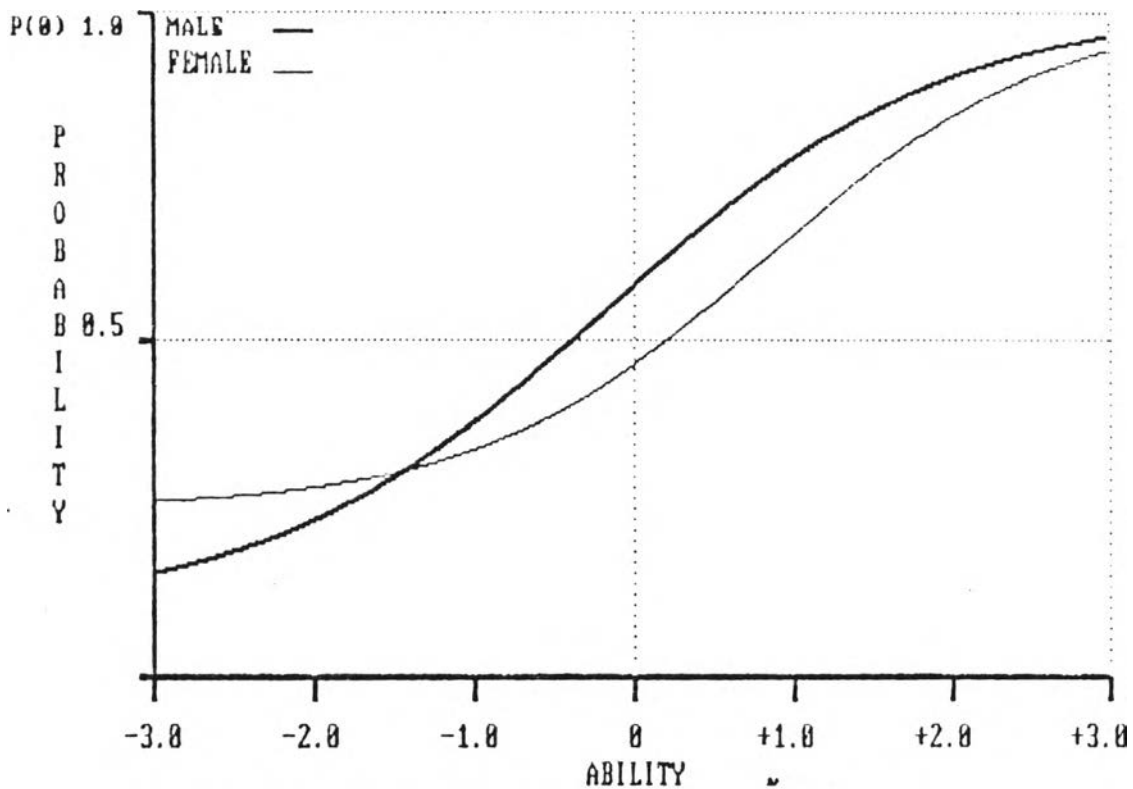


FIGURE 255 PLOT ITEM CHARACTERISTIC CURVE (p091)

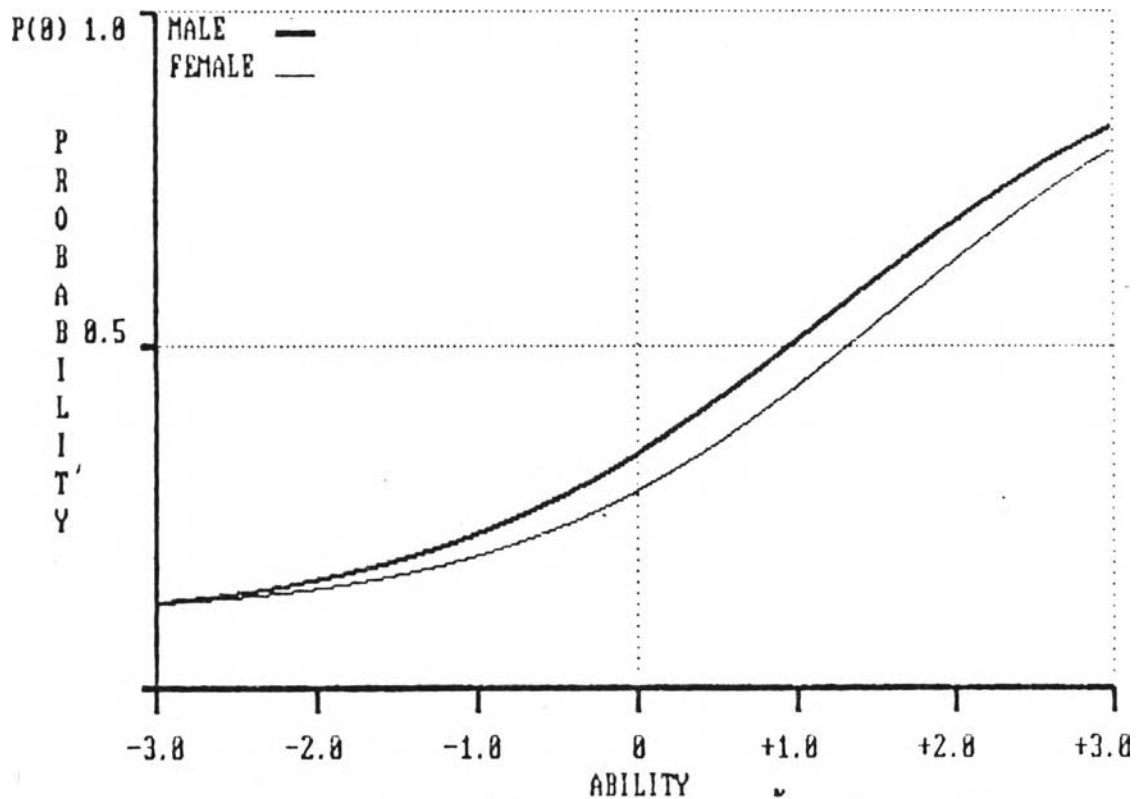


FIGURE 256 PLOT ITEM CHARACTERISTIC CURVE (p092)

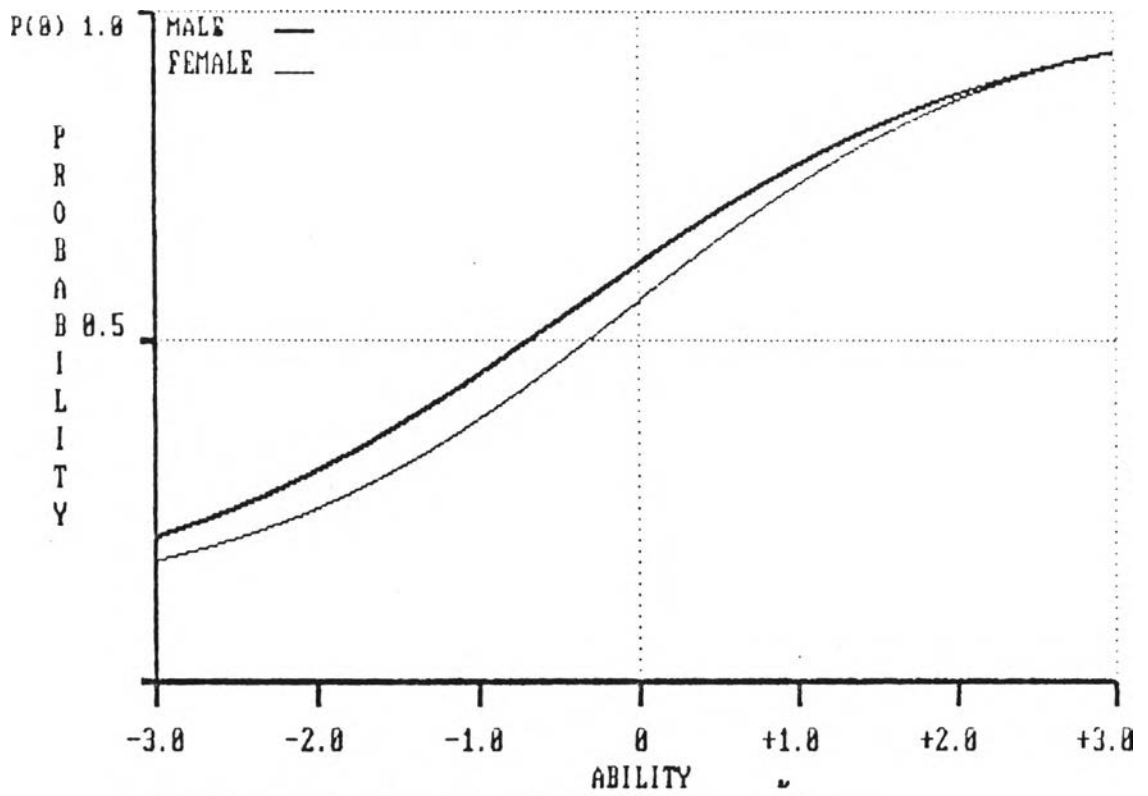


FIGURE 257 PLOT ITEM CHARACTERISTIC CURVE (number 93)

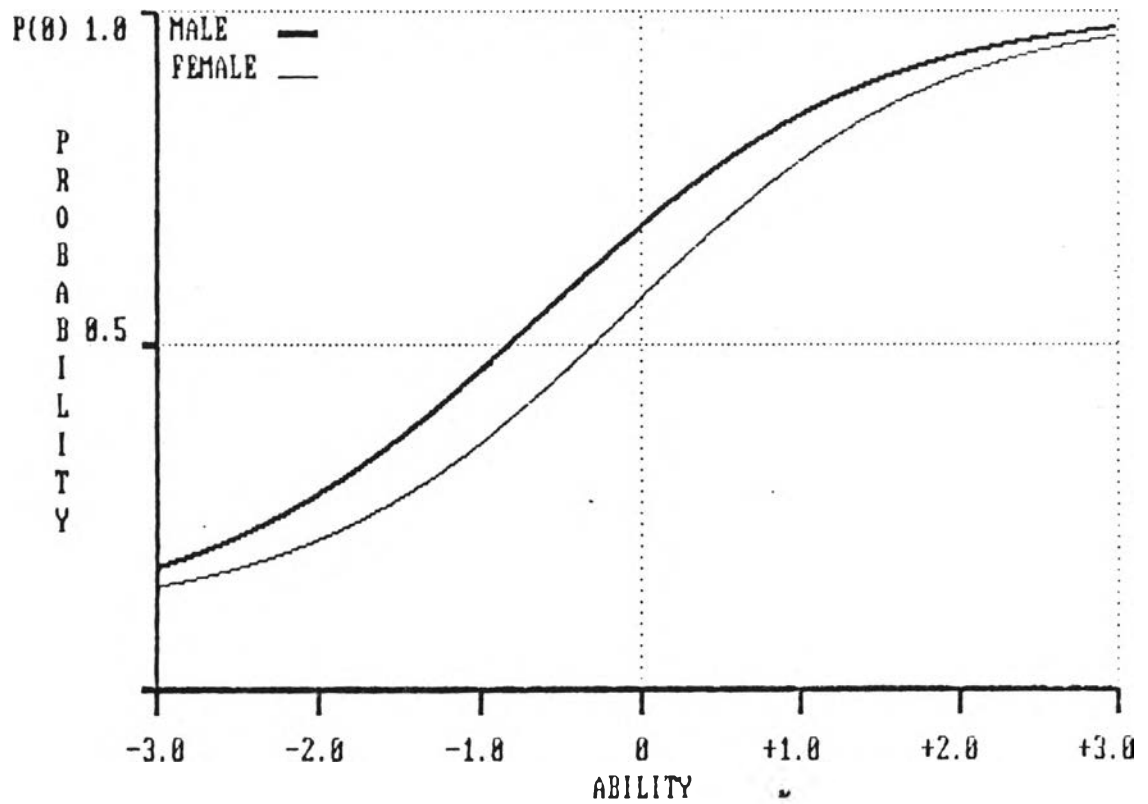


FIGURE 258 PLOT ITEM CHARACTERISTIC CURVE (number 94)

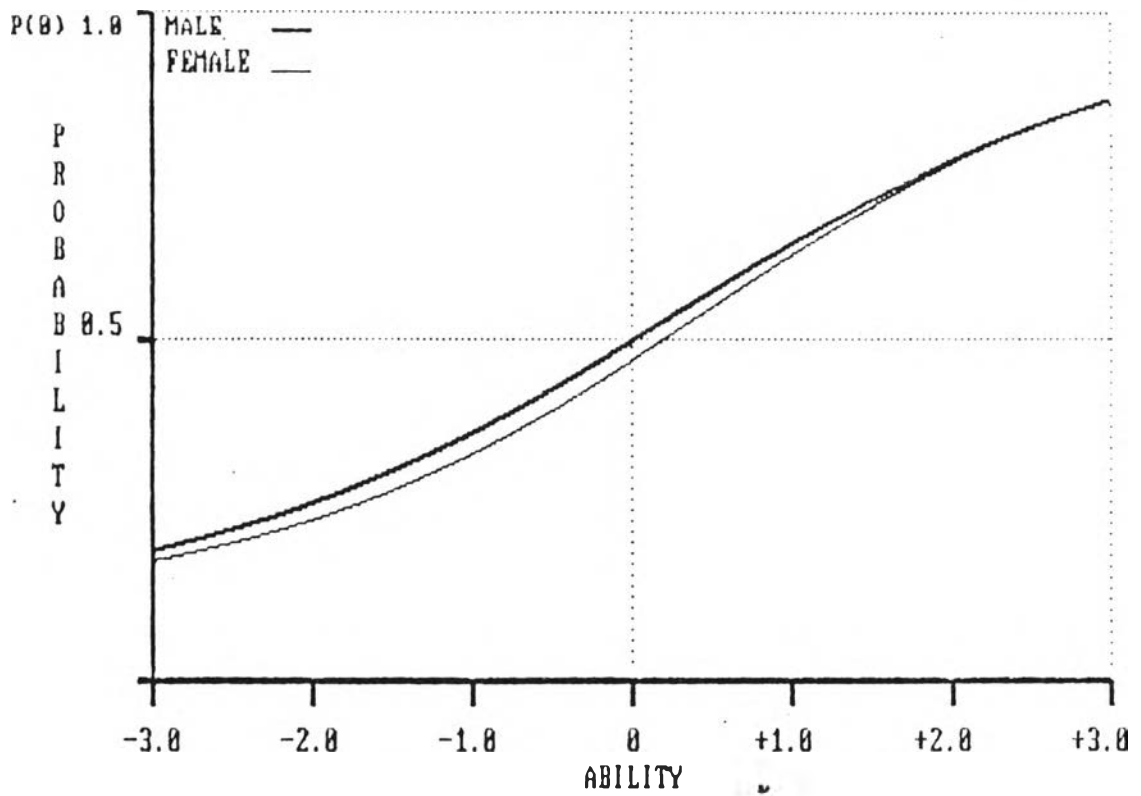


FIGURE 259 PLOT ITEM CHARACTERISTIC CURVE (ID 95)

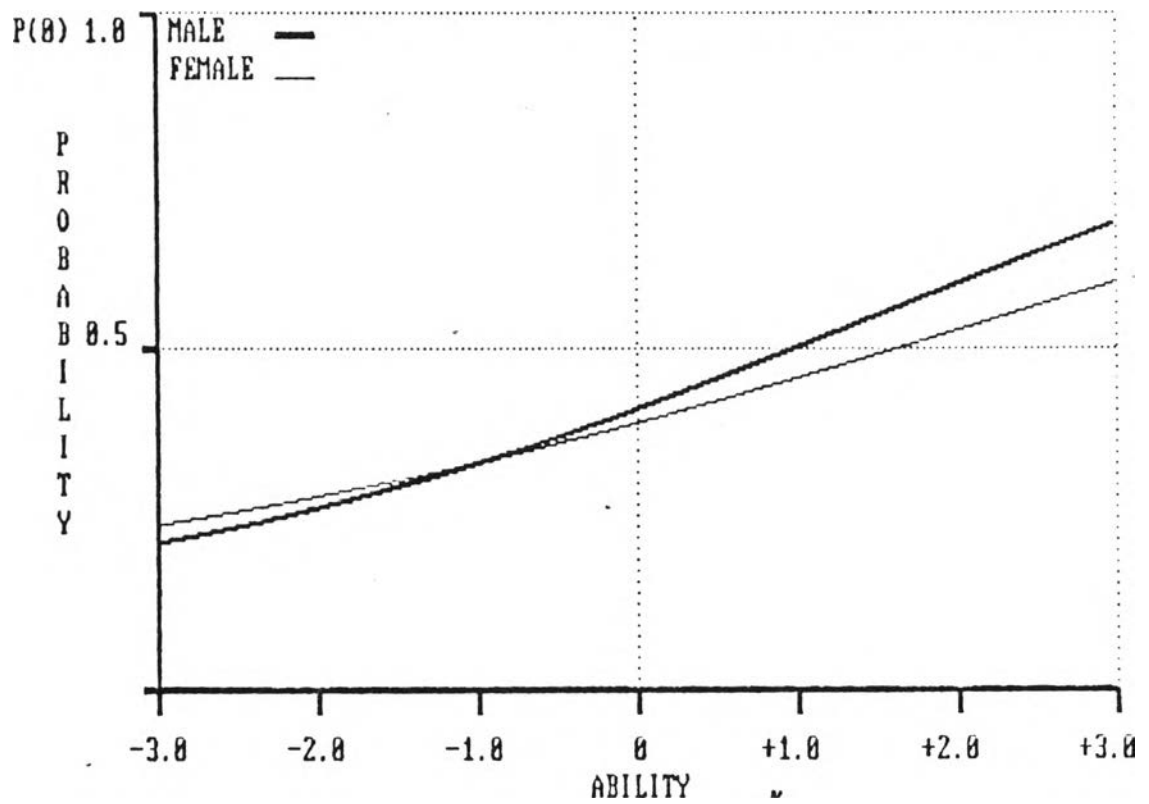


FIGURE 260 PLOT ITEM CHARACTERISTIC CURVE (ID 97)

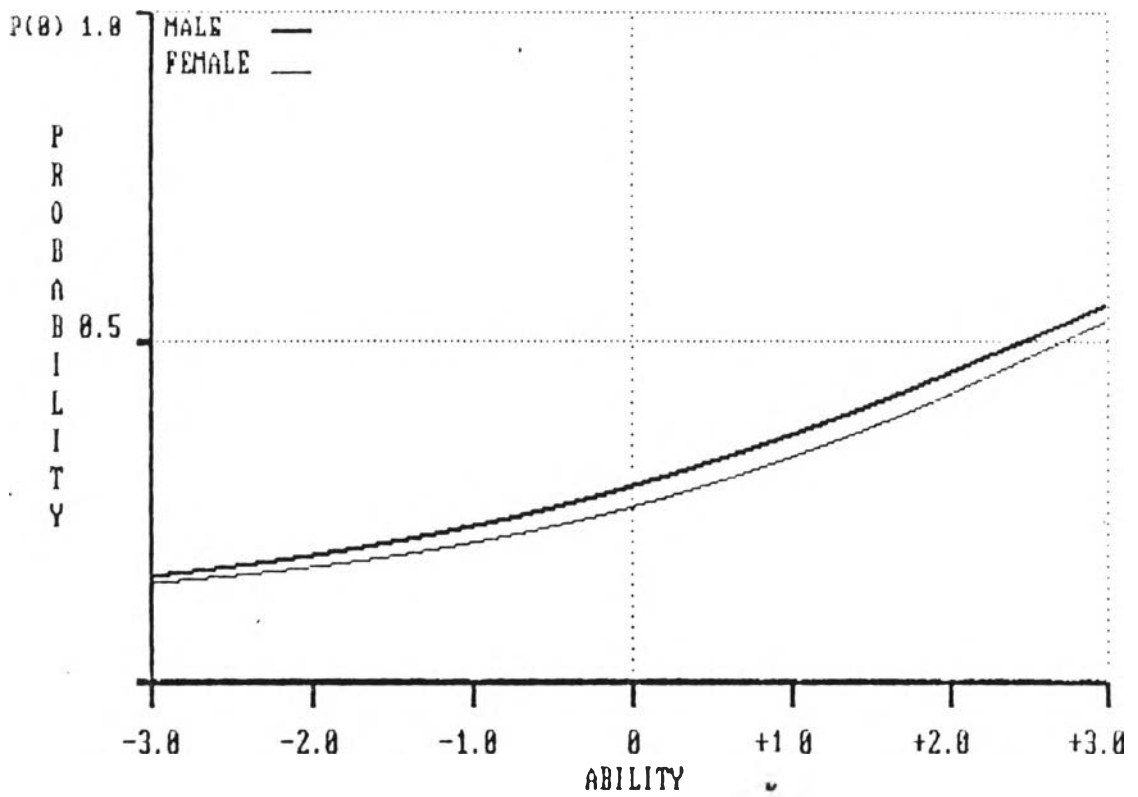


FIGURE 261 PLOT ITEM CHARACTERISTIC CURVE (2008)

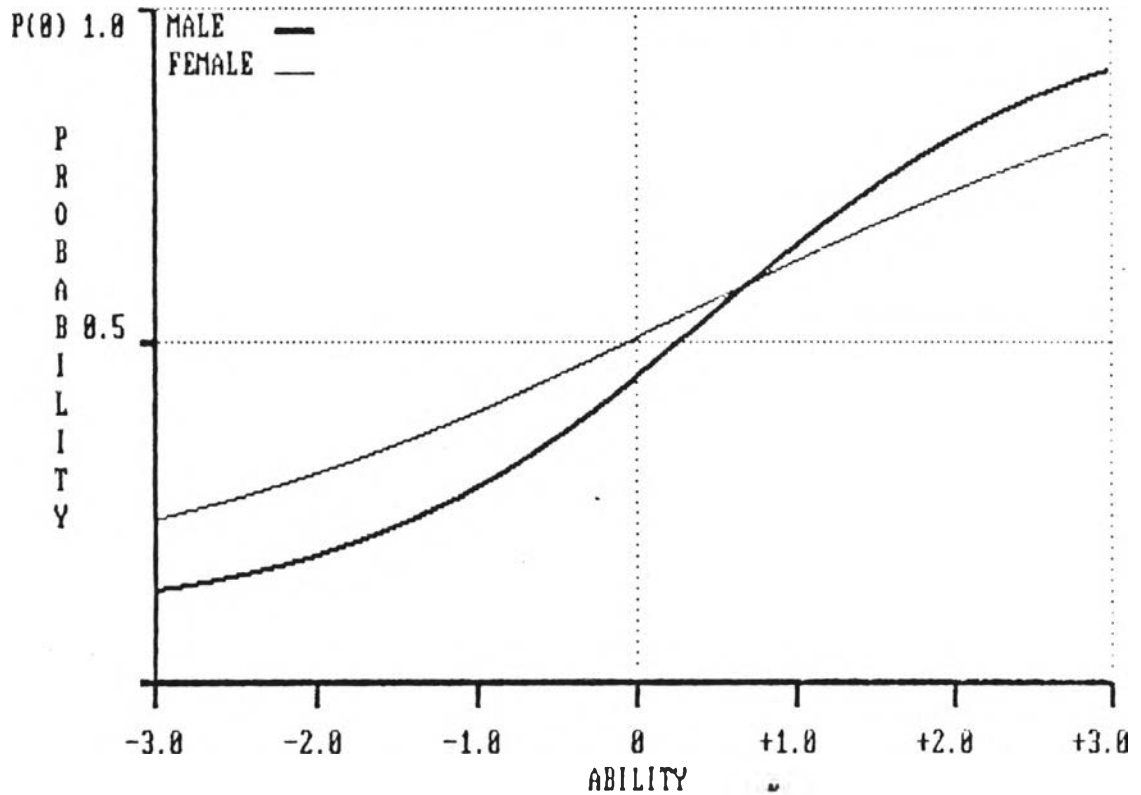


FIGURE 262 PLOT ITEM CHARACTERISTIC CURVE (2099)

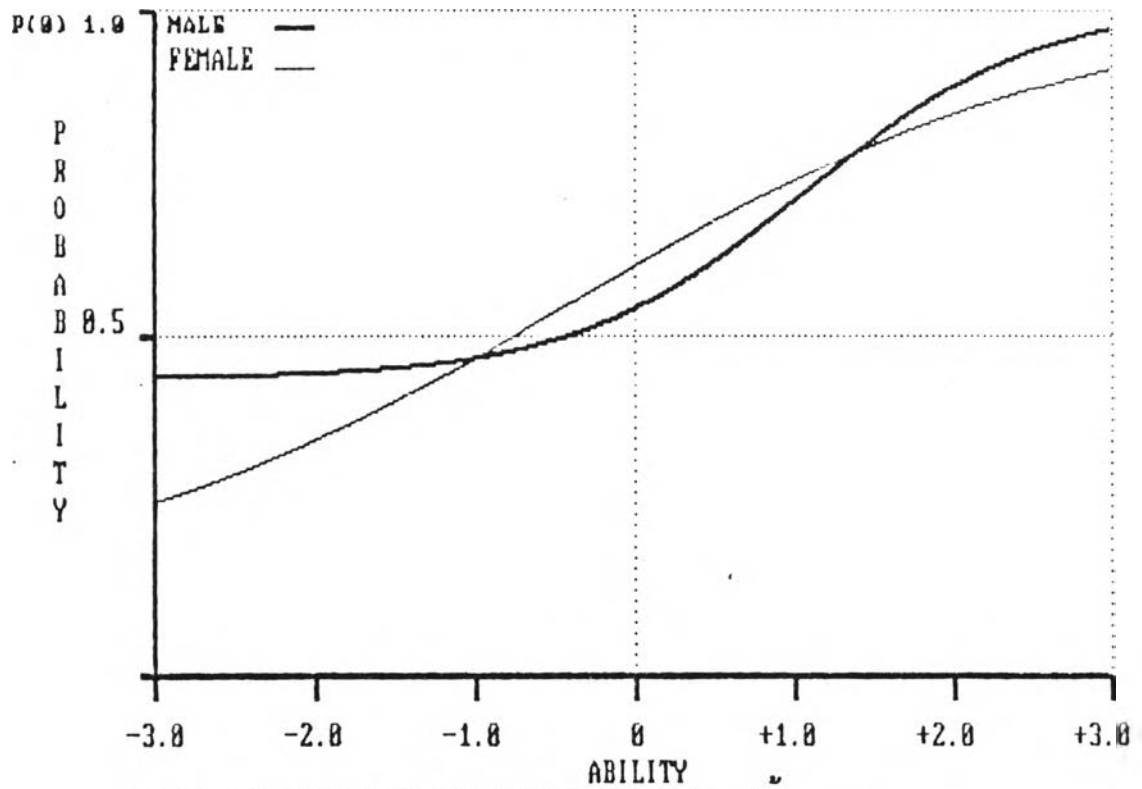


FIGURE 263 PLOT ITEM CHARACTERISTIC CURVE ( $n=100$ )



## ประวัติผู้เขียน

นายสุรศักดิ์ อมรัตน์ศักดิ์ เกิดวันที่ 16 กุมภาพันธ์ พ.ศ. 2496 ณ อำเภอบางระจัน จังหวัดสิงห์บุรี สำเร็จปริญญาการศึกษามัธยมศึกษา จากมหาวิทยาลัยศรีนครินทรวิโรฒ บางเขน เมื่อปีการศึกษา 2517 สำเร็จปริญญาการศึกษามหาบัณฑิต สาขาการวัดผลการศึกษา จาก มหาวิทยาลัยศรีนครินทรวิโรฒ ประสานมิตร เมื่อปีการศึกษา 2528 เข้าศึกษาต่อในหลักสูตร ปริญญาครุศาสตรดุษฎีบัณฑิต สาขาการวัดและประเมินผลการศึกษา บัณฑิตวิทยาลัย จุฬาลงกรณ์ มหาวิทยาลัย เมื่อปีการศึกษา 2524 ปัจจุบันรับราชการในตำแหน่งรองศาสตราจารย์ ระดับ 8 ภาควิชาการทดสอบและวิจัย คณะศึกษาศาสตร์ มหาวิทยาลัยรามคำแหง

