

附录

附表 1 $T^2(p, n)$ 表

T^2 统计量是多元分析中最重要的统计量之一，虽然 T^2 与 F 分布之间有密切的关系，有关 T^2 统计量的计算均可转化为 F 分布，但鉴于 T^2 统计量的重要性，我们还是列出了它的表，一则一般统计书中均没有；二则有了它在使用时可减少一点计算。

设 $S \sim W_p(n, \Sigma), u \sim N_p(0, \Sigma), S$ 与 u 独立, $n > p$, 则 T^2 统计量是

$$T^2(p, n) = nu'S^{-1}u$$

称 T^2 服从中心 T^2 分布，记作 $T^2 \sim T^2(p, n)$ 。

T^2 分布与 F 分布的关系在第二章中作了介绍。附表 1 共有三个参数 α, p, n ;

α 0.05

n 2~ ∞

p 1~30

例： $T^2_{0.05}(7, 20) = 27.642$

$\alpha=0.05$

p	1	2	3	4	5
n					
2	18.513				
3	10.128	57.000			
4	7.709	25.472	114.986		
5	6.608	17.361	46.383	192.468	
6	5.983	13.887	29.661	72.937	289.446
7	5.591	12.001	22.720	44.718	105.157
8	5.318	10.828	19.028	33.230	62.561
9	5.117	10.033	16.766	27.202	45.453

10	4.965	9.459	15.248	23.545	35.561
11	4.844	9.026	14.163	21.108	31.205
12	4.747	8.689	13.350	19.376	27.656
13	4.667	8.418	12.719	18.086	25.145
14	4.600	8.197	12.216	17.089	23.281
15	4.543	8.012	11.806	16.296	21.845
16	4.494	7.856	11.465	15.651	20.706
17	4.451	7.722	11.177	15.117	19.782
18	4.414	7.606	10.931	14.667	19.017
19	4.381	7.504	10.719	14.283	18.375
20	4.351	7.415	10.533	13.952	17.828
21	4.325	7.335	10.370	13.663	17.356
22	4.301	7.264	10.225	13.409	16.945
23	4.279	7.200	10.095	13.184	16.585
24	4.260	7.142	9.979	12.983	16.265
25	4.242	7.089	9.874	12.803	15.981
26	4.225	7.041	9.779	12.641	15.726
27	4.210	6.997	9.692	12.493	15.496
28	4.196	6.957	9.612	12.359	15.287
29	4.183	6.919	9.539	12.236	15.097
30	4.171	6.885	9.471	12.123	14.924
35	4.121	6.744	9.200	11.647	14.240
40	4.085	6.642	9.005	11.356	13.762
45	4.057	6.564	8.859	11.118	13.409
50	4.034	6.503	8.744	10.934	13.138
55	4.016	6.454	8.652	10.787	12.923
60	4.001	6.413	8.577	10.668	12.748
70	3.978	6.350	8.460	10.484	12.482
80	3.960	6.303	8.375	10.350	12.289
90	3.947	6.267	8.309	10.248	12.142
100	3.936	6.239	8.257	10.167	12.027
110	3.927	6.216	8.215	10.102	11.934
120	3.920	6.196	8.181	10.048	11.858
150	3.904	6.155	8.105	9.931	11.693
200	3.888	6.113	8.031	9.817	11.531
400	3.865	6.052	7.922	9.650	11.297
1 000	3.851	6.015	7.857	9.552	11.160
∞	3.841	5.991	7.815	9.488	11.070

附表 1 (续) $T^2(p, n)$ $\alpha=0.05$

p	6	7	8	9	10
n					
7	405.920				
8	143.050	541.890			
9	83.202	186.622	697.356		
10	59.403	106.649	235.873	872.317	
11	47.123	75.088	132.903	290.806	1 066.774
12	39.764	58.893	92.512	161.967	351.421
13	34.911	49.232	71.878	111.676	193.842
14	31.488	42.881	59.612	86.079	132.582
15	28.955	38.415	51.572	70.907	101.499
16	27.008	35.117	45.932	60.986	83.121
17	25.467	32.588	41.775	54.041	71.127
18	24.219	30.590	38.592	48.930	62.746
19	23.189	28.975	36.082	45.023	56.587
20	22.324	27.642	34.054	41.946	51.884
21	21.588	26.525	32.384	39.463	48.184
22	20.954	25.576	30.985	37.419	45.202
23	20.403	24.759	29.798	35.709	42.750
24	19.920	24.049	28.777	34.258	40.699
25	19.492	23.427	27.891	33.013	38.961
26	19.112	22.878	27.114	31.932	37.469
27	18.770	22.388	26.428	30.985	36.176
28	18.463	21.950	25.818	30.149	35.043
29	18.184	21.555	25.272	29.407	34.044
30	17.931	21.198	24.781	28.742	33.156
35	16.944	19.823	22.913	26.252	29.881
40	16.264	18.890	21.668	24.624	27.783
45	15.767	18.217	20.781	23.477	26.326
50	15.388	17.709	20.117	22.627	25.256
55	15.090	17.311	19.600	21.972	24.437
60	14.850	16.992	19.188	21.451	23.790
70	14.485	16.510	18.571	20.676	22.834
80	14.222	16.165	18.130	20.127	22.162
90	14.022	15.905	17.801	19.718	21.663
100	13.867	15.702	17.544	19.401	21.279
110	13.741	15.540	17.340	19.149	20.973
120	13.639	15.407	17.172	18.943	20.725
150	13.417	15.121	16.814	18.504	20.196
200	13.202	14.845	16.469	18.083	19.692
400	12.890	14.447	15.975	17.484	18.976
1 000	12.710	14.217	15.692	17.141	18.570
∞	12.592	14.067	15.507	16.919	18.307

附表 1 (续) $T^2(p, n)$

$\alpha=0.05$

p	11	12	13	14	15
n					
12	1 280.727				
13	417.719	1 514.176			
14	228.529	489.700	1 767.120		
15	155.231	266.028	567.364	2 039.560	
16	118.138	179.624	306.339	650.712	2 331.496
17	96.253	135.998	205.761	349.464	739.744
18	81.996	110.304	155.078	233.643	395.402
19	72.047	93.592	125.276	175.380	263.269
20	64.745	81.945	105.918	141.169	196.903
21	59.177	73.407	92.442	118.974	157.983
22	54.800	66.902	82.573	103.538	132.759
23	51.274	61.793	75.060	92.244	115.234
24	48.378	57.681	69.165	83.653	102.421
25	45.958	54.305	64.423	76.916	92.681
26	43.908	51.487	60.533	71.501	85.048
27	42.149	49.099	57.286	67.061	78.916
28	40.624	47.053	54.538	63.357	73.890
29	39.291	45.280	52.183	60.223	69.700
30	38.115	43.730	50.143	57.539	66.156
35	33.848	38.209	43.030	48.392	54.392
40	31.175	34.833	38.794	43.102	47.807
45	29.346	32.559	35.990	39.665	43.614
50	28.017	30.926	34.000	37.256	40.715
55	27.008	29.696	32.514	35.475	38.593
60	26.216	28.737	31.364	34.106	36.973
70	25.053	27.339	29.699	32.139	34.666
80	24.241	26.370	28.553	30.796	33.103
90	23.642	25.658	27.716	29.820	31.974
100	23.182	25.114	27.079	29.080	31.120
110	22.817	24.683	26.577	28.499	30.453
120	22.521	24.335	26.171	28.030	29.961
150	21.894	23.600	25.317	27.049	28.795
200	21.297	22.904	24.514	26.128	27.749
400	20.457	21.928	23.392	24.851	26.306
1 000	19.981	21.379	22.764	24.139	25.505
∞	19.675	21.026	22.362	23.685	24.996

附表 1 (续) $T^2(p, n)$ $\alpha=0.05$

p	16	17	18	19	20
n					
17	2 642.928				
18	834.459	2 973.855			
19	444.153	934.859	3 324.278		
20	294.641	495.717	1 040.942	3 694.197	
21	219.648	327.758	550.095	1 152.710	4 083.611
22	175.719	243.615	362.620	607.287	1 270.161
23	147.275	194.376	268.804	399.227	667.292
24	127.529	162.522	213.955	295.215	437.581
25	113.103	140.425	178.499	234.456	322.849
26	102.144	124.291	153.920	195.207	255.879
27	93.560	112.042	135.985	168.016	212.647
28	86.668	102.453	122.376	148.186	182.713
29	81.021	94.757	111.727	133.146	160.893
30	76.316	88.455	103.184	121.382	144.352
35	61.152	68.824	77.602	87.737	99.556
40	52.969	58.658	64.961	71.982	79.849
45	47.871	52.476	57.475	62.921	68.879
50	44.398	48.330	52.540	57.058	61.921
55	41.882	45.361	49.047	52.961	57.126
60	39.978	43.131	46.447	49.939	53.624
70	37.287	40.009	42.840	45.787	48.859
80	35.479	37.929	40.457	43.069	45.771
90	34.180	36.444	38.767	41.155	43.610
100	33.203	35.331	37.507	39.733	42.013
110	32.441	34.466	36.530	38.636	40.784
120	31.830	33.775	35.752	37.764	39.811
150	30.559	32.342	34.144	35.968	37.815
200	29.378	31.017	32.665	34.325	35.997
400	27.758	29.209	30.658	32.108	33.558
1 000	26.862	28.215	29.561	30.902	32.238
∞	26.296	27.587	28.869	30.144	31.410

附表 1 (续) $T^2(p, n)$
 $\alpha=0.05$

p	22	24	26	28	30
n					
23	4 920.928				
24	1 522.11				
25	795.744	5 836.227			
26	519.524	1 796.808			
27	381.784	935.451	6 829.509		
28	301.492	608.449	2 094.237		
29	249.719	445.609	1 086.413	7 900.773	
30	213.908	350.794	704.358	2 414.402	
35	130.166	175.384	247.780	378.491	666.429
40	98.797	123.657	157.540	206.067	280.417
45	82.644	99.572	120.860	148.362	185.105
50	72.859	85.775	101.254	120.123	143.589
55	66.316	76.873	89.125	103.514	120.641
60	61.642	70.667	80.905	92.623	106.162
70	55.417	62.599	70.504	79.253	88.990
80	51.467	57.594	64.210	71.381	79.185
90	48.739	54.190	59.997	66.204	72.857
100	46.744	51.725	56.983	62.544	68.440
110	45.221	49.860	54.719	59.820	65.184
120	44.022	48.399	52.958	57.715	62.685
150	41.581	45.451	49.435	53.540	57.777
200	39.381	42.822	46.327	49.900	53.545
400	36.462	39.375	42.300	45.239	48.195
1 000	34.899	37.547	40.186	42.819	45.446
∞	33.924	36.415	38.885	41.337	43.773

附表 2 $\Lambda_{\alpha}(p, m_1, m_2)$ 表

设 $S_1 \sim W_p(m_1, \Sigma), S_2 \sim W_p(m_2, \Sigma), S_1$ 和 S_2 独立, 则

$$\Lambda(p, m_1, m_2) = \frac{|S_1|}{|S_1 + S_2|}$$

就是著名的维尔克斯 Λ 统计量, 本表共有四个参数 α, p, m_1, m_2 , 这里列表的范围是:

$$\alpha=0.05$$

$$p=1(1)8 \quad (\text{即 } p=1, 2, \cdots, 8)$$

$$m_1=1 \sim \infty$$

$$m_2=1 \sim 12, \text{ 当 } p > 8 \text{ 时, 利用关系}$$

$$\Lambda(p, m_1, m_2) = (m_2, p, m_1 + m_2 - p)$$

来查得。

$$\text{例: } \Lambda_{0.05}(2, 20, 7) = 0.336\ 951$$

$$\Lambda_{0.05}(10, 20, 3) = \Lambda_{0.05}(3, 10, 13) = 0.016\ 783$$

$p=1$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_1
1	0.006157	0.002501	0.001543	0.001112	0.000868	0.000712	0.000603	0.000523	0.000462	0.000413	0.000374	0.000341	1
2	0.097504	0.050003	0.033615	0.025322	0.020309	0.016953	0.014549	0.012741	0.011333	0.010208	0.009281	0.008512	2
3	0.228516	0.135712	0.097321	0.076019	0.062408	0.052963	0.046005	0.040672	0.036446	0.033020	0.030182	0.027794	3
4	0.341614	0.223602	0.168243	0.135345	0.113373	0.097610	0.085724	0.076447	0.068985	0.062851	0.057724	0.053375	4
5	0.430725	0.301697	0.235535	0.194031	0.165283	0.144073	0.127777	0.114822	0.104279	0.095505	0.088120	0.081787	5
6	0.500549	0.368408	0.295990	0.248596	0.214783	0.189255	0.169266	0.153168	0.139893	0.128754	0.119278	0.111115	6
7	0.555908	0.424896	0.349304	0.298096	0.260620	0.231812	0.208893	0.190186	0.174606	0.161423	0.150116	0.140289	7
8	0.600708	0.472870	0.396057	0.342590	0.302612	0.271332	0.246124	0.225311	0.207825	0.192902	0.180008	0.168747	8
9	0.637512	0.513916	0.437164	0.382446	0.340790	0.307770	0.280823	0.258362	0.239288	0.222931	0.208679	0.196182	9
10	0.668243	0.549286	0.473389	0.418213	0.375519	0.341248	0.313019	0.289246	0.268936	0.251373	0.235992	0.222443	10
11	0.694275	0.580017	0.505463	0.450317	0.407104	0.372040	0.342834	0.318045	0.296768	0.278229	0.261932	0.247467	11
12	0.716553	0.606964	0.534027	0.479309	0.435913	0.400299	0.370453	0.344940	0.322876	0.303528	0.286469	0.271240	12

13	0.735840	0.630737	0.559570	0.505524	0.462189	0.426361	0.396057	0.369995	0.347321	0.327362	0.309662	0.293823	1
14	0.752686	0.651825	0.582581	0.529327	0.486267	0.450348	0.419800	0.393372	0.370239	0.349823	0.331589	0.315247	14
15	0.767548	0.670715	0.603333	0.551025	0.508362	0.472534	0.441864	0.415222	0.391754	0.370941	0.352325	0.335541	15
16	0.780701	0.687653	0.622162	0.570862	0.528717	0.493103	0.462433	0.435638	0.411957	0.390869	0.371918	0.354797	16
17	0.792480	0.702972	0.639343	0.589081	0.547516	0.512177	0.481598	0.454742	0.430939	0.409637	0.390472	0.373077	17
18	0.803070	0.716858	0.655029	0.605835	0.564911	0.529907	0.499481	0.472687	0.448807	0.427368	0.408020	0.390411	18
19	0.812622	0.729553	0.669434	0.621307	0.581024	0.546448	0.516235	0.489502	0.465637	0.444138	0.424652	0.406891	19
20	0.821320	0.741135	0.682709	0.635651	0.596039	0.561890	0.531952	0.505341	0.481506	0.459991	0.440430	0.422546	20
21	0.829224	0.751770	0.694977	0.648941	0.610046	0.573555	0.546692	0.520264	0.496521	0.475006	0.455414	0.437469	21
22	0.836472	0.761597	0.706329	0.661316	0.623108	0.589905	0.560562	0.534332	0.510712	0.489258	0.469635	0.451660	22
23	0.843140	0.770660	0.716858	0.672867	0.635361	0.602631	0.573639	0.547638	0.524139	0.502762	0.483185	0.465179	23
24	0.849274	0.779083	0.726685	0.683655	0.646851	0.614609	0.585968	0.560211	0.536896	0.515594	0.496078	0.478088	24
25	0.854950	0.786896	0.735870	0.693771	0.657639	0.625900	0.597626	0.572128	0.548981	0.527817	0.508362	0.490402	25
26	0.860199	0.794189	0.744446	0.703278	0.667786	0.636566	0.608643	0.583435	0.560486	0.539459	0.520081	0.502167	26
27	0.865112	0.800995	0.752487	0.712189	0.677383	0.646637	0.619080	0.594147	0.571411	0.550537	0.531281	0.513428	27
28	0.869675	0.807373	0.760040	0.720612	0.686432	0.656174	0.628998	0.604370	0.581833	0.561127	0.541982	0.524200	28
29	0.873947	0.813339	0.767151	0.728546	0.694992	0.665222	0.638482	0.614075	0.591766	0.571228	0.552200	0.534515	29
30	0.877945	0.818970	0.773865	0.736053	0.703110	0.673798	0.647385	0.623322	0.601242	0.580872	0.561996	0.544418	30
40	0.907349	0.860886	0.824463	0.793274	0.765594	0.740540	0.717575	0.696365	0.676636	0.658188	0.640884	0.624603	40
60	0.937485	0.904968	0.878807	0.855911	0.835175	0.816055	0.798233	0.781494	0.765686	0.750702	0.736420	0.722809	60
80	0.952827	0.927841	0.907471	0.889450	0.872940	0.857590	0.843124	0.829437	0.816391	0.803925	0.791962	0.780464	80
100	0.962128	0.941845	0.925179	0.910324	0.896637	0.883835	0.871696	0.860153	0.849083	0.838455	0.828201	0.818314	100
120	0.968363	0.951297	0.937200	0.924578	0.912894	0.901916	0.891475	0.881501	0.871901	0.862660	0.853706	0.845045	120
140	0.972836	0.958107	0.945890	0.934921	0.924731	0.915131							

附表 2(续) $\Lambda_n(p, m_1, m_2)$

$p=2$	m_2											$\alpha=0.05$	
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_1
1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1
2	0.002500	0.000641	0.000287	0.000142	0.000104	0.000072	0.000053	0.000041	0.000032	0.000026	0.000022	0.000018	2
3	0.049998	0.018318	0.009528	0.005844	0.003950	0.002849	0.002152	0.001683	0.001352	0.001110	0.000928	0.000787	3
4	0.135725	0.061800	0.035817	0.023460	0.016578	0.012346	0.009555	0.007615	0.006212	0.005165	0.004362	0.003734	4
5	0.223606	0.117368	0.073621	0.050765	0.037211	0.028476	0.022507	0.018244	0.015092	0.012695	0.010826	0.009343	5
6	0.301715	0.174902	0.116450	0.083663	0.063188	0.049481	0.039834	0.032772	0.027440	0.023320	0.020068	0.017453	6
7	0.368405	0.229737	0.160239	0.118984	0.092129	0.073571	0.060172	0.050155	0.042465	0.036426	0.031600	0.027678	7
8	0.424876	0.280187	0.202813	0.154741	0.122376	0.099380	0.082397	0.069475	0.059404	0.051386	0.044908	0.039579	8
9	0.472866	0.325883	0.243151	0.189781	0.152779	0.125881	0.105643	0.089993	0.077615	0.067661	0.059515	0.052772	9
10	0.513885	0.367036	0.280802	0.223432	0.182644	0.152421	0.129282	0.111138	0.096610	0.084797	0.075044	0.066901	10
11	0.549281	0.404052	0.315720	0.255369	0.211592	0.178545	0.152898	0.132506	0.116013	0.102453	0.091178	0.081680	11
12	0.580029	0.437339	0.347988	0.285511	0.239373	0.203997	0.176155	0.153782	0.135511	0.120356	0.107656	0.096885	12
13	0.606970	0.467384	0.377744	0.313837	0.265838	0.228568	0.198874	0.174774	0.154909	0.138311	0.124284	0.112321	13
14	0.630737	0.494599	0.405216	0.340396	0.291016	0.252171	0.220930	0.195325	0.174061	0.156149	0.140923	0.127849	14
15	0.651851	0.519281	0.430564	0.365263	0.314863	0.274786	0.242249	0.215357	0.192837	0.173755	0.157442	0.143350	15
16	0.670711	0.541775	0.454003	0.388530	0.337412	0.296391	0.262763	0.234782	0.211185	0.191059	0.173755	0.158740	16
17	0.687662	0.562317	0.475724	0.410322	0.358763	0.316990	0.282502	0.253583	0.229036	0.208000	0.189807	0.173946	17
18	0.702982	0.581146	0.495888	0.430784	0.378964	0.336632	0.301430	0.271723	0.246366	0.224530	0.205530	0.188918	18
19	0.716866	0.598489	0.514629	0.449961	0.398041	0.355335	0.319573	0.289225	0.263169	0.240614	0.220915	0.203611	19
20	0.729531	0.614483	0.532092	0.467968	0.416109	0.373163	0.336951	0.306072	0.279429	0.256249	0.235937	0.218013	20
21	0.741124	0.629283	0.548399	0.484925	0.433211	0.390129	0.353609	0.322287	0.295147	0.271437	0.250565	0.232083	21

22	0.751776	0.643011	0.563622	0.500886	0.449429	0.406286	0.369555	0.337873	0.310325	0.286147	0.264800	0.245821	22
23	0.761598	0.655775	0.577893	0.515922	0.464800	0.421699	0.384810	0.352883	0.324978	0.300409	0.278639	0.259224	23
24	0.770680	0.667666	0.591286	0.530135	0.479373	0.436391	0.399429	0.367295	0.339116	0.314213	0.292087	0.272280	24
25	0.779088	0.678783	0.603884	0.543551	0.493227	0.450412	0.413436	0.381165	0.352775	0.327593	0.305127	0.285006	25
26	0.786893	0.689182	0.615752	0.556269	0.506409	0.463802	0.426867	0.394506	0.365946	0.340539	0.317798	0.297372	26
27	0.794192	0.698945	0.626937	0.568306	0.518951	0.476588	0.439744	0.407337	0.378645	0.353047	0.330095	0.309407	27
28	0.800992	0.708108	0.637517	0.579727	0.530891	0.488822	0.452093	0.419700	0.390911	0.365171	0.342019	0.321110	28
29	0.807354	0.716737	0.647497	0.590582	0.542291	0.500519	0.463948	0.431586	0.402753	0.376900	0.353591	0.332484	29
30	0.813343	0.724899	0.656962	0.600899	0.553155	0.511722	0.475325	0.443028	0.414182	0.388244	0.364802	0.343537	30
40	0.857594	0.786433	0.729818	0.681627	0.639419	0.601870	0.568076	0.537426	0.509467	0.483873	0.460296	0.438550	40
60	0.903437	0.852599	0.810662	0.773804	0.740586	0.710190	0.682157	0.656096	0.631804	0.609029	0.587643	0.567501	60
80	0.926967	0.887496	0.854347	0.824736	0.797636	0.772490	0.748974	0.726849	0.705927	0.686107	0.667279	0.649328	80
100	0.941272	0.909051	0.881684	0.856993	0.834186	0.812834	0.792697	0.773596	0.755405	0.738034	0.721395	0.705440	100
120	0.950898	0.923673	0.900382	0.879233	0.859569	0.841056	0.823491	0.806739	0.790700	0.775302	0.760485	0.746201	120
140	0.957812	0.934247	0.913983	0.895493	0.878224	0.861896	0.846339	0.831442	0.817125	0.803326	0.789999	0.777105	140
170	0.965169	0.945562	0.928606	0.913057	0.898465	0.884603	0.871338	0.858581	0.846267	0.834352	0.822797	0.811574	170
200	0.970341	0.953554	0.938982	0.925569	0.912940	0.900904	0.889349	0.878202	0.867412	0.856939	0.846755	0.836834	200
240	0.975243	0.961158	0.948887	0.937554	0.926848	0.916613	0.906758	0.897224	0.887968	0.878959	0.870174	0.861593	240
320	0.981393	0.970741	0.961415	0.952766	0.944563	0.936691	0.929082	0.921692	0.914493	0.907461	0.900579	0.893835	320
440	0.986445	0.978644	0.971788	0.965408	0.959337	0.953491	0.947824	0.942303	0.936908	0.931623	0.926435	0.921337	440
600	0.990047	0.984298	0.979233	0.974507	0.969998	0.965648	0.961420	0.957293	0.953251	0.949283	0.945380	0.941537	600
800	0.992529	0.988203	0.984384	0.980814	0.977404	0.974108	0.970900	0.967763	0.964687	0.961662	0.958683	0.955744	800
1000	0.994021	0.990552	0.987487	0.984620	0.981877	0.979224	0.976640	0.974110	0.971627	0.969184	0.966775	0.964397	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 2(续) $\Lambda_\alpha(p, m_1, m_2)$

$p=3$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_2
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.000002	0.000004	0.000005	0.000008	0.000010	0.000013	1
3	0.001698	0.000354	0.000179	0.000127	0.000105	0.000095	0.000091	0.000090	0.000091	0.000092	0.000095	0.000098	3
4	0.033740	0.009612	0.004205	0.002314	0.001479	0.001052	0.000809	0.000659	0.000562	0.000496	0.000449	0.000416	4
5	0.097355	0.035855	0.017521	0.010010	0.006357	0.004369	0.003195	0.002458	0.001971	0.001636	0.001397	0.001222	5
6	0.168271	0.073634	0.039672	0.024047	0.015792	0.011018	0.008067	0.006148	0.004849	0.003939	0.003281	0.002793	6
7	0.235525	0.116476	0.067711	0.043226	0.029433	0.021043	0.015642	0.012012	0.009485	0.007674	0.006345	0.005347	7
8	0.295976	0.160244	0.098932	0.065947	0.046378	0.033966	0.025706	0.019990	0.015911	0.012927	0.010697	0.008997	8
9	0.349277	0.202814	0.131378	0.090794	0.065660	0.049161	0.037855	0.029838	0.023995	0.019637	0.016323	0.013763	9
10	0.396084	0.243139	0.163846	0.116701	0.086448	0.066012	0.051643	0.041238	0.033514	0.027654	0.023135	0.019593	10
11	0.437147	0.280808	0.195556	0.142927	0.108110	0.083979	0.066659	0.053876	0.044225	0.036801	0.030993	0.026391	11
12	0.473377	0.315719	0.226090	0.168939	0.130131	0.102644	0.082534	0.067443	0.055894	0.046882	0.039757	0.034049	12
13	0.505452	0.347981	0.255220	0.194414	0.152160	0.121656	0.098973	0.081704	0.072869	0.057724	0.049278	0.042437	13
14	0.534018	0.377735	0.282849	0.219113	0.173959	0.140775	0.115736	0.096413	0.081246	0.069166	0.059407	0.051442	14
15	0.559570	0.405221	0.308951	0.242944	0.195322	0.159796	0.132619	0.111416	0.094593	0.081025	0.070029	0.060954	15
16	0.582577	0.430566	0.333588	0.265812	0.216138	0.178574	0.149493	0.126564	0.108178	0.093264	0.081026	0.070875	16
17	0.603338	0.454006	0.356777	0.287689	0.236338	0.197017	0.166236	0.141728	0.121917	0.105704	0.092299	0.081109	17
18	0.622168	0.475728	0.378631	0.308599	0.255858	0.215044	0.182762	0.156827	0.135694	0.118273	0.103768	0.091588	18
19	0.639337	0.495908	0.399223	0.328552	0.274710	0.232604	0.199009	0.171789	0.149446	0.130904	0.115361	0.102241	19
20	0.655028	0.514622	0.418629	0.347546	0.292843	0.249666	0.214918	0.186544	0.163097	0.143521	0.127018	0.113012	20
21	0.669437	0.532101	0.436898	0.365676	0.310304	0.266216	0.230467	0.201077	0.176620	0.156088	0.138689	0.123835	21

22	0.682712	0.548393	0.454182	0.382934	0.327083	0.282253	0.245626	0.215325	0.189969	0.168561	0.150321	0.134680	22
23	0.694960	0.563637	0.470473	0.399402	0.343191	0.297740	0.260391	0.229291	0.203123	0.180907	0.161896	0.145521	23
24	0.706310	0.577895	0.485889	0.415077	0.358665	0.312738	0.274743	0.242939	0.216044	0.193091	0.173370	0.156313	24
25	0.716875	0.591311	0.500491	0.430041	0.375233	0.327222	0.288709	0.256276	0.228718	0.205103	0.184720	0.167023	25
26	0.726681	0.603899	0.514336	0.444332	0.387790	0.341199	0.302238	0.269280	0.241137	0.216929	0.195944	0.177651	26
27	0.735837	0.615757	0.527453	0.457946	0.401488	0.354711	0.315386	0.281968	0.253300	0.228535	0.206998	0.188160	27
28	0.744404	0.626944	0.539914	0.470981	0.414658	0.367742	0.328131	0.294313	0.265188	0.239935	0.217899	0.198546	28
29	0.752437	0.637514	0.551741	0.483431	0.427307	0.380334	0.340477	0.306326	0.276805	0.251110	0.228615	0.208809	29
30	0.759984	0.647501	0.563023	0.495347	0.439475	0.392490	0.352461	0.318033	0.288158	0.262026	0.239155	0.218912	30
40	0.816139	0.723938	0.651356	0.590773	0.538846	0.493686	0.453976	0.418785	0.387401	0.359271	0.333940	0.311045	40
60	0.874843	0.807778	0.752424	0.704238	0.661334	0.622640	0.587440	0.555224	0.525598	0.498272	0.472957	0.449477	60
80	0.905160	0.852653	0.808266	0.768805	0.732964	0.700027	0.669520	0.641124	0.614572	0.589678	0.566281	0.544236	80
100	0.923660	0.880557	0.843610	0.810333	0.779746	0.751296	0.724666	0.699598	0.675935	0.653520	0.632235	0.611999	100
120	0.936178	0.899588	0.867973	0.839253	0.812632	0.787686	0.764150	0.741841	0.720623	0.700389	0.681054	0.662546	120
140	0.945137	0.913391	0.885776	0.860534	0.836998	0.814820	0.793780	0.773732	0.754565	0.736197	0.718557	0.701592	140
170	0.954680	0.928199	0.904999	0.883652	0.863624	0.844636	0.826518	0.809156	0.792465	0.776383	0.760857	0.745847	170
200	0.961395	0.938685	0.918687	0.900202	0.882782	0.866197	0.850307	0.835018	0.820262	0.805990	0.792160	0.778739	200
240	0.967765	0.948679	0.931793	0.916116	0.901281	0.887100	0.873459	0.860284	0.847521	0.835131	0.823081	0.811346	240
320	0.975762	0.961296	0.948422	0.936405	0.924972	0.913987	0.903369	0.893064	0.883033	0.873250	0.863692	0.854341	320
440	0.982336	0.971725	0.962235	0.953337	0.944835	0.936632	0.928671	0.920913	0.913333	0.905910	0.898630	0.891482	440
600	0.987028	0.979198	0.972173	0.965563	0.959229	0.953099	0.947133	0.941302	0.935589	0.929978	0.924461	0.919029	600
800	0.990261	0.984364	0.979060	0.974060	0.969257	0.964600	0.960057	0.955610	0.951243	0.946947	0.942713	0.938538	800
1000	0.992204	0.987475	0.983215	0.979193	0.975326	0.971571	0.967905	0.964310	0.960776	0.957296	0.953863	0.950473	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 2(续) $\Lambda_n(p, m_1, m_2)$

$p=4$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_1
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2
3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	0.000003	3
4	0.001378	0.000292	0.000127	0.000075	0.000052	0.000040	0.000033	0.000029	0.000026	0.000025	0.000023	0.000022	4
5	0.025529	0.006091	0.002314	0.001128	0.000647	0.000416	0.000292	0.000218	0.000172	0.000141	0.000120	0.000105	5
6	0.076071	0.023604	0.010010	0.005073	0.002903	0.001818	0.001223	0.000872	0.000652	0.000508	0.000409	0.000338	6
7	0.135374	0.050839	0.024047	0.013014	0.007737	0.004938	0.003338	0.002365	0.001745	0.001333	0.001050	0.000848	7
8	0.194043	0.083695	0.043226	0.024857	0.015415	0.010129	0.006975	0.004994	0.003698	0.002819	0.002206	0.001766	8
9	0.248619	0.118995	0.065947	0.039919	0.025729	0.017408	0.012249	0.008907	0.006664	0.005112	0.004009	0.003208	9
10	0.298130	0.154758	0.090794	0.057378	0.038260	0.026586	0.019107	0.014130	0.010706	0.008288	0.006542	0.005254	10
11	0.342593	0.189778	0.116701	0.076502	0.052524	0.037385	0.027402	0.020589	0.015806	0.012365	0.009839	0.007948	11
12	0.382448	0.223411	0.142927	0.096664	0.068077	0.049495	0.036933	0.028170	0.021899	0.017314	0.013895	0.011302	12
13	0.418181	0.255376	0.168939	0.117377	0.084546	0.062632	0.047493	0.036731	0.028895	0.023075	0.018675	0.015303	13
14	0.450335	0.285511	0.194414	0.138286	0.101586	0.076537	0.058886	0.046115	0.036676	0.029572	0.024133	0.019917	14
15	0.479286	0.313829	0.219113	0.159131	0.118954	0.090983	0.070925	0.056188	0.045140	0.036722	0.030208	0.025101	15
16	0.505512	0.340400	0.242944	0.179688	0.136434	0.105779	0.083443	0.066806	0.054181	0.044440	0.036830	0.030830	16
17	0.529312	0.365253	0.265812	0.199832	0.153891	0.120780	0.096316	0.077856	0.063688	0.052645	0.043936	0.036980	17
18	0.551035	0.388530	0.287689	0.219490	0.171171	0.135856	0.109411	0.089236	0.073577	0.061263	0.051456	0.043568	18
19	0.570858	0.410325	0.308599	0.238570	0.188209	0.150905	0.122643	0.100843	0.083764	0.070213	0.059338	0.050514	19
20	0.589077	0.430766	0.328552	0.257052	0.204926	0.165853	0.135926	0.112607	0.094180	0.079441	0.067513	0.057782	20
21	0.605832	0.449947	0.347546	0.274909	0.221288	0.180626	0.149180	0.124462	0.104757	0.088877	0.075938	0.065315	21

22	0.621318	0.467988	0.365676	0.292142	0.237242	0.195197	0.162364	0.136342	0.115440	0.098474	0.084565	0.073068	22
23	0.635634	0.484922	0.382834	0.308765	0.252783	0.209511	0.175434	0.148204	0.126185	0.108191	0.093352	0.081008	23
24	0.648934	0.500883	0.399402	0.324767	0.267896	0.223535	0.188341	0.160009	0.136950	0.117977	0.102254	0.089100	24
25	0.661320	0.515918	0.415077	0.340175	0.282568	0.237277	0.201067	0.171726	0.147695	0.127818	0.111240	0.097305	25
26	0.672864	0.530124	0.430041	0.355004	0.296810	0.250710	0.213597	0.183333	0.158399	0.137656	0.120274	0.105608	26
27	0.683663	0.543561	0.444332	0.369254	0.310608	0.263809	0.225900	0.194794	0.169017	0.147483	0.129346	0.113968	27
28	0.693769	0.556262	0.457946	0.382979	0.323980	0.276602	0.237971	0.206105	0.179569	0.157274	0.138418	0.122368	28
29	0.703259	0.568303	0.470981	0.396197	0.336947	0.289051	0.249798	0.217241	0.189991	0.167006	0.147478	0.130785	29
30	0.712188	0.579734	0.483431	0.408914	0.349488	0.301188	0.261373	0.228198	0.200311	0.176673	0.156516	0.139205	30
40	0.778877	0.668158	0.52817	0.513297	0.455181	0.405867	0.363565	0.326959	0.295085	0.267163	0.242600	0.220888	40
60	0.849044	0.767047	0.700066	0.642556	0.592126	0.547349	0.507256	0.471148	0.438462	0.408771	0.381699	0.356960	60
80	0.907714	0.854312	0.808614	0.767700	0.730354	0.695928	0.663968	0.634166	0.606280	0.580112	0.555487	0.532298	80
100	0.922736	0.877325	0.838018	0.802443	0.769650	0.739118	0.710513	0.683595	0.658183	0.634132	0.611324	0.589657	100
120	0.885442	0.820705	0.766251	0.718260	0.675124	0.635912	0.600023	0.566986	0.536460	0.508176	0.481887	0.457414	120
140	0.933554	0.894066	0.859605	0.828176	0.798994	0.771635	0.745829	0.721386	0.698162	0.676045	0.654943	0.634778	140
170	0.945088	0.912072	0.883006	0.856283	0.831279	0.807662	0.785224	0.763821	0.743347	0.723717	0.704865	0.686733	170
200	0.953211	0.924848	0.899727	0.876499	0.854647	0.833900	0.814087	0.795095	0.776838	0.759251	0.742281	0.725885	200
240	0.960919	0.937047	0.915781	0.896012	0.877319	0.859482	0.842366	0.825881	0.809961	0.794554	0.779622	0.765130	240
320	0.970605	0.952477	0.936212	0.920990	0.906503	0.892593	0.879164	0.866513	0.853513	0.841211	0.829220	0.817517	320
440	0.978571	0.965253	0.953233	0.941922	0.931100	0.920655	0.910522	0.900654	0.891022	0.881602	0.872376	0.863331	440
600	0.984259	0.974422	0.965507	0.957084	0.948995	0.941160	0.933530	0.926075	0.918772	0.911606	0.904563	0.897634	600
800	0.988181	0.980767	0.974028	0.967644	0.961498	0.955529	0.949702	0.943994	0.938390	0.932877	0.927446	0.922092	800
1000	0.990538	0.984589	0.979173	0.974034	0.969078	0.964257	0.959545	0.954922	0.950376	0.945898	0.941481	0.937120	1000
∞	1.000000	1.000000	1.000000	1.000000	1.								

附表 2(续) $\Lambda_n(p, m_1, m_2)$

$p=5$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_2
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2
3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3
4	0.000000	0.000000	0.000000	0.000000	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	4
5	0.001598	0.000291	0.000105	0.000052	0.000031	0.000021	0.000015	0.000012	0.000010	0.000008	0.000007	0.000007	5
6	0.021145	0.004391	0.001479	0.000647	0.000335	0.000197	0.000126	0.000087	0.000064	0.000049	0.000039	0.000032	6
7	0.062771	0.016898	0.006357	0.002903	0.001514	0.000872	0.000544	0.000361	0.000253	0.000185	0.000141	0.000110	7
8	0.113526	0.037390	0.015792	0.007737	0.004208	0.002479	0.001557	0.001032	0.000716	0.000516	0.000385	0.000296	8
9	0.165351	0.063279	0.029433	0.015415	0.008787	0.005348	0.003433	0.002304	0.001607	0.001159	0.000861	0.000657	9
10	0.214794	0.092191	0.046378	0.025729	0.015321	0.009639	0.006343	0.004335	0.003062	0.002225	0.001660	0.001267	10
11	0.260635	0.122403	0.065660	0.038260	0.023674	0.015360	0.010358	0.007216	0.005173	0.003802	0.002858	0.002192	11
12	0.302608	0.152793	0.086448	0.052524	0.033618	0.022418	0.015467	0.010980	0.007991	0.005946	0.004512	0.003486	12
13	0.340813	0.182662	0.108110	0.068077	0.044878	0.030680	0.021607	0.015611	0.011530	0.008685	0.006659	0.005187	13
14	0.375528	0.211602	0.130131	0.084546	0.057198	0.039965	0.028683	0.021061	0.015774	0.012024	0.009313	0.007317	14
15	0.407128	0.239373	0.152160	0.101586	0.070324	0.050117	0.036584	0.027266	0.020687	0.015949	0.012475	0.009885	15
16	0.435899	0.265851	0.173759	0.118954	0.084048	0.060965	0.045199	0.034145	0.026219	0.020428	0.016129	0.012885	16
17	0.462173	0.291015	0.195322	0.136434	0.098187	0.072367	0.054409	0.041618	0.032312	0.025427	0.020252	0.016307	17
18	0.486266	0.314859	0.216138	0.153891	0.112582	0.084178	0.064111	0.049602	0.038909	0.030904	0.024819	0.020133	18
19	0.508362	0.337418	0.236338	0.171171	0.127108	0.096308	0.074209	0.058024	0.045951	0.036810	0.029790	0.024339	19
20	0.528714	0.358776	0.255858	0.188209	0.141662	0.108634	0.084619	0.066805	0.053373	0.043100	0.035137	0.028896	20
21	0.547516	0.378956	0.274710	0.204926	0.156176	0.121083	0.095254	0.075885	0.061122	0.049724	0.040817	0.033782	21

22	0.564905	0.398038	0.292843	0.221288	0.170563	0.133590	0.106063	0.085203	0.069149	0.056652	0.045803	0.038962	22
23	0.581036	0.416105	0.310304	0.237242	0.184782	0.146095	0.116974	0.094699	0.077408	0.063832	0.053052	0.044411	23
24	0.596032	0.433216	0.327083	0.252783	0.198795	0.158544	0.127948	0.104337	0.085849	0.071231	0.059537	0.050103	24
25	0.610030	0.449429	0.343191	0.267896	0.212568	0.170898	0.138945	0.114058	0.094444	0.078809	0.066222	0.056005	25
26	0.623126	0.464800	0.358665	0.282568	0.226071	0.183129	0.149909	0.123843	0.103144	0.086536	0.073084	0.062103	26
27	0.635368	0.479382	0.373523	0.296810	0.239294	0.195207	0.160826	0.133657	0.111931	0.094385	0.080093	0.068358	27
28	0.646832	0.493247	0.387790	0.310608	0.252224	0.207116	0.171667	0.143454	0.120766	0.102328	0.087220	0.074761	28
29	0.657645	0.506421	0.401488	0.323980	0.264873	0.218828	0.182408	0.153240	0.129630	0.110336	0.094455	0.081283	29
30	0.667803	0.518945	0.414658	0.336947	0.277200	0.230347	0.193043	0.162971	0.138499	0.118393	0.101767	0.087901	30
40	0.744010	0.617178	0.521747	0.446045	0.384424	0.333492	0.290896	0.254963	0.224433	0.198322	0.175874	0.156480	40
60	0.824764	0.729155	0.652037	0.586878	0.530670	0.481578	0.438367	0.400085	0.365997	0.335520	0.308193	0.283593	60
80	0.866847	0.790730	0.727186	0.671775	0.622536	0.578316	0.538319	0.501966	0.468774	0.438392	0.410497	0.384827	80
100	0.892643	0.829563	0.775817	0.728040	0.684827	0.645343	0.609037	0.575509	0.544420	0.515540	0.488629	0.463515	100
120	0.910071	0.856268	0.809790	0.767957	0.729656	0.694256	0.661341	0.630608	0.601822	0.574793	0.549362	0.525395	120
140	0.922634	0.875748	0.834850	0.797705	0.763400	0.731431	0.701466	0.673268	0.646653	0.621477	0.597616	0.574968	140
170	0.936039	0.896748	0.862122	0.830370	0.800777	0.772953	0.746649	0.721687	0.697934	0.675284	0.653648	0.632953	170
200	0.945486	0.911680	0.881674	0.853973	0.827989	0.803406	0.780024	0.757705	0.736343	0.715856	0.696171	0.677251	200
240	0.954455	0.925960	0.900496	0.876838	0.854512	0.833264	0.812938	0.793426	0.774647	0.756540	0.739054	0.722148	240
320	0.965732	0.944055	0.924519	0.906224	0.888827	0.872146	0.856074	0.840535	0.825476	0.810855	0.796641	0.782805	320
440	0.975031	0.959064	0.944590	0.930949	0.917894	0.905302	0.893096	0.881226	0.869655	0.858357	0.847311	0.836500	440
600	0.981642	0.969850	0.959096	0.948613	0.939124	0.929642	0.920411	0.911396	0.902572	0.893921	0.885429	0.877084	600
800	0.986214	0.977320	0.969181	0.961450	0.953996	0.946753	0.939682	0.932756	0.925957	0.919273	0.912693	0.906209	800
1000	0.988963	0.981823	0.975277	0.969047	0.963029	0.957171	0.951441	0.945820	0.940292	0.934848	0.929480	0.924182	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 2(续) $\Lambda_n(p, m_1, m_2)$

$p=6$	m_2											$\alpha=0.05$	
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_2
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2
3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3
4	0.000000	0.000000	0.000000	0.000000	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	4
5	0.000007	0.000002	0.000001	0.000001	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5
6	0.002045	0.000315	0.000095	0.000040	0.000021	0.000012	0.000008	0.000006	0.000004	0.000003	0.000003	0.000002	6
7	0.018804	0.003479	0.001052	0.000416	0.000197	0.000106	0.000063	0.000040	0.000027	0.000020	0.000015	0.000011	7
8	0.053911	0.012883	0.004369	0.001818	0.000872	0.000465	0.000270	0.000168	0.000111	0.000076	0.000055	0.000041	8
9	0.098038	0.028824	0.011018	0.004938	0.002479	0.001358	0.000798	0.000497	0.000325	0.000222	0.000157	0.000115	9
10	0.144274	0.049685	0.021043	0.010129	0.005348	0.003035	0.001826	0.001155	0.000762	0.000521	0.000369	0.000269	10
11	0.189355	0.073697	0.033966	0.017408	0.009639	0.005672	0.003507	0.002263	0.001514	0.001046	0.000744	0.000543	11
12	0.231866	0.099450	0.049161	0.026586	0.015360	0.009348	0.005940	0.003915	0.002664	0.001865	0.001338	0.000983	12
13	0.271356	0.125933	0.066012	0.037385	0.022418	0.014071	0.009172	0.006173	0.004273	0.003033	0.002200	0.001630	13
14	0.307797	0.152453	0.083979	0.049495	0.030680	0.019795	0.013205	0.009066	0.006381	0.004592	0.003370	0.002520	14
15	0.341285	0.178581	0.102644	0.062632	0.039965	0.026433	0.018012	0.012593	0.009005	0.006568	0.004877	0.003682	15
16	0.372033	0.204010	0.121656	0.076537	0.050117	0.033893	0.023544	0.016741	0.012147	0.008974	0.006740	0.005137	16
17	0.400304	0.228568	0.140775	0.090983	0.060965	0.042061	0.029737	0.021472	0.015794	0.011811	0.008966	0.006898	17
18	0.426364	0.252176	0.159176	0.105779	0.072367	0.050834	0.036522	0.026746	0.019924	0.015070	0.011554	0.008971	18
19	0.450349	0.274785	0.178574	0.120780	0.084178	0.060119	0.043825	0.032520	0.024510	0.018734	0.014503	0.011356	19
20	0.472562	0.296393	0.197017	0.135856	0.096308	0.069818	0.051576	0.038739	0.029518	0.022785	0.017796	0.014049	20
21	0.493091	0.316990	0.215044	0.150905	0.108634	0.079840	0.059715	0.045350	0.034906	0.027193	0.021418	0.017040	21

22	0.512182	0.336628	0.232604	0.165853	0.121083	0.090122	0.068178	0.052311	0.040646	0.031936	0.025354	0.020317	22
23	0.529913	0.355328	0.249666	0.180626	0.133590	0.100596	0.076899	0.059574	0.046695	0.036988	0.029582	0.023864	23
24	0.546452	0.373143	0.266216	0.195197	0.146095	0.111189	0.085836	0.067090	0.053016	0.042316	0.034078	0.027670	24
25	0.561889	0.390109	0.282253	0.209511	0.158544	0.121873	0.094944	0.074824	0.059586	0.047895	0.038825	0.031716	25
26	0.576348	0.406285	0.297740	0.223535	0.170898	0.132587	0.104168	0.082735	0.066362	0.053696	0.043795	0.035986	26
27	0.589899	0.421688	0.312738	0.237277	0.183129	0.143309	0.113485	0.090793	0.073318	0.059697	0.048977	0.040460	27
28	0.602633	0.436379	0.327222	0.250710	0.195207	0.153998	0.122849	0.098970	0.080420	0.065867	0.054339	0.045123	28
29	0.614602	0.450416	0.341199	0.263809	0.207116	0.164629	0.132250	0.107224	0.087654	0.072196	0.059866	0.049957	29
30	0.625896	0.463794	0.354711	0.276602	0.218828	0.175171	0.141648	0.115539	0.094994	0.078649	0.065542	0.054951	30
40	0.710937	0.569976	0.466792	0.387183	0.324162	0.273407	0.232192	0.198251	0.170132	0.146678	0.126985	0.110367	40
60	0.801604	0.693451	0.607528	0.536153	0.475641	0.423707	0.378774	0.339636	0.305361	0.275238	0.248638	0.225098	60
80	0.849063	0.762264	0.690479	0.628610	0.574313	0.526153	0.483144	0.444543	0.409736	0.378269	0.349725	0.323787	80
100	0.878218	0.805945	0.744748	0.690824	0.642495	0.598763	0.558956	0.522538	0.489125	0.458377	0.430004	0.403784	100
120	0.897944	0.836112	0.782919	0.735354	0.692128	0.652489	0.615927	0.582063	0.550602	0.521300	0.493955	0.468392	120
140	0.912172	0.858176	0.811198	0.768751	0.729786	0.693709	0.660119	0.628724	0.599296	0.571649	0.545628	0.521100	140
170	0.927365	0.882016	0.842092	0.805615	0.771776	0.740119	0.710350	0.682254	0.655667	0.630455	0.606507	0.583730	170
200	0.938078	0.899001	0.864314	0.832375	0.802523	0.774395	0.747758	0.722444	0.698328	0.675308	0.653300	0.632233	200
240	0.948255	0.915270	0.885761	0.858391	0.832628	0.808187	0.784886	0.762599	0.741229	0.720701	0.700953	0.681935	240
320	0.961056	0.935919	0.913212	0.891956	0.871772	0.852459	0.833892	0.815985	0.798676	0.781916	0.765666	0.749894	320
440	0.971597	0.953076	0.936212	0.920308	0.905097	0.890438	0.876249	0.862471	0.849063	0.835995	0.823242	0.810784	440
600	0.979129	0.965422	0.952870	0.940969	0.929529	0.918448	0.907669	0.897152	0.886868	0.876798	0.866924	0.857233	600
800	0.984325	0.973979	0.964469	0.955420	0.946689	0.938203	0.929921	0.921812	0.913858	0.906042	0.898354	0.890785	800
1000	0.987450	0.979142	0.971487	0.964187	0.957129	0.950256	0.943532	0.936937	0.930455	0.924037	0.911783	0.911578	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 2(续) $\Lambda_n(p, m_1, m_2)$

$p=7$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_2
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2
3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3
4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4
5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5
6	0.000043	0.000006	0.000002	0.000001	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6
7	0.002625	0.000350	0.000091	0.000033	0.000015	0.000008	0.000005	0.000003	0.000002	0.000002	0.000001	0.000001	7
8	0.017612	0.002953	0.000809	0.000292	0.000126	0.000063	0.000034	0.000020	0.000013	0.000009	0.000006	0.000005	8
9	0.047835	0.010329	0.003195	0.001223	0.000543	0.000270	0.000147	0.000086	0.000053	0.000035	0.000024	0.000017	9
10	0.086645	0.023060	0.008067	0.003338	0.001558	0.000798	0.000440	0.000259	0.000160	0.000104	0.000070	0.000049	10
11	0.128234	0.040186	0.015642	0.006974	0.003433	0.001826	0.001035	0.000619	0.000387	0.000252	0.000170	0.000119	11
12	0.169506	0.060396	0.025707	0.012249	0.006343	0.003508	0.002048	0.001252	0.000796	0.000525	0.000357	0.000249	12
13	0.209026	0.082538	0.037857	0.019109	0.010357	0.005940	0.003571	0.002234	0.001448	0.000967	0.000665	0.000468	13
14	0.246203	0.105734	0.051646	0.027402	0.015466	0.009172	0.005668	0.003628	0.002395	0.001625	0.001131	0.000804	14
15	0.280861	0.129346	0.066659	0.036933	0.021607	0.013206	0.008371	0.005476	0.003682	0.002537	0.001787	0.001285	15
16	0.313032	0.152929	0.082533	0.047494	0.028684	0.018013	0.011688	0.007801	0.005337	0.003733	0.002664	0.001936	16
17	0.342842	0.176179	0.098971	0.058884	0.036586	0.023544	0.015606	0.010611	0.007379	0.005235	0.003782	0.002778	17
18	0.370455	0.198894	0.115731	0.070921	0.045199	0.029736	0.020096	0.013900	0.009814	0.007057	0.005159	0.003829	18
19	0.396050	0.220944	0.132623	0.083445	0.054409	0.036520	0.025122	0.017653	0.012640	0.009204	0.006805	0.005102	19
20	0.419802	0.242252	0.149498	0.096315	0.064111	0.043824	0.030640	0.021845	0.015847	0.011676	0.008725	0.006605	20
21	0.441876	0.262777	0.166240	0.109415	0.074209	0.050179	0.036603	0.026450	0.019422	0.014469	0.010921	0.008342	21

22	0.462425	0.282503	0.182765	0.122645	0.084616	0.059717	0.042965	0.031435	0.023345	0.017571	0.013387	0.010314	22
23	0.481587	0.301432	0.199007	0.135923	0.095257	0.068177	0.049578	0.036769	0.027595	0.020971	0.016120	0.012521	23
24	0.499486	0.319577	0.214919	0.149181	0.106063	0.076901	0.056697	0.042416	0.032148	0.024653	0.019108	0.014956	24
25	0.156238	0.336959	0.230467	0.162364	0.116978	0.085838	0.063980	0.048346	0.036980	0.028599	0.022341	0.017614	25
26	0.531942	0.353606	0.245631	0.175429	0.127957	0.094941	0.071488	0.054525	0.042067	0.032794	0.025807	0.020487	26
27	0.546689	0.369546	0.260395	0.188340	0.138940	0.104168	0.179183	0.060924	0.047385	0.037217	0.029493	0.023565	27
28	0.560561	0.384810	0.274752	0.201068	0.149909	0.133482	0.087032	0.067514	0.052911	0.041851	0.033384	0.026838	28
29	0.573629	0.399430	0.288701	0.213591	0.160826	0.122851	0.095005	0.074268	0.058622	0.046678	0.037467	0.030296	29
30	0.585961	0.413438	0.302243	0.225894	0.171667	0.132247	0.103073	0.081161	0.064496	0.051680	0.041727	0.033928	30
40	0.679228	0.525996	0.417050	0.335433	0.272668	0.223571	0.184671	0.153533	0.128393	0.107941	0.091192	0.077392	40
60	0.779306	0.659576	0.566032	0.489695	0.426135	0.372561	0.327012	0.288026	0.254476	0.225471	0.200293	0.178361	60
80	0.831906	0.735024	0.655779	0.588321	0.529875	0.478709	0.433602	0.393626	0.358051	0.326284	0.297833	0.272287	80
100	0.864288	0.783251	0.715144	0.655689	0.602930	0.555673	0.513081	0.474521	0.439488	0.407570	0.378421	0.351744	100
120	0.886219	0.816680	0.757179	0.704361	0.656738	0.613420	0.573796	0.537400	0.503866	0.472893	0.444226	0.417647	120
140	0.902052	0.841199	0.788462	0.741086	0.697881	0.658184	0.621410	0.587314	0.555578	0.525974	0.498306	0.472408	140
170	0.918970	0.867751	0.822764	0.781839	0.744063	0.708913	0.676042	0.645194	0.616167	0.588800	0.562955	0.538514	170
200	0.930906	0.886705	0.847518	0.811553	0.778074	0.746666	0.717058	0.689053	0.662499	0.637274	0.613274	0.590412	200
240	0.942249	0.904887	0.871471	0.840546	0.811527	0.784091	0.758031	0.733198	0.709478	0.686784	0.665038	0.644178	240
320	0.956525	0.928004	0.902213	0.878097	0.855239	0.833417	0.812491	0.792362	0.772959	0.754224	0.736112	0.718583	320
440	0.968286	0.947243	0.928043	0.909937	0.892635	0.875985	0.859892	0.844294	0.829142	0.814403	0.800046	0.786051	440
600	0.976693	0.961103	0.946788	0.933208	0.920155	0.907522	0.895244	0.883276	0.871588	0.860157	0.848964	0.837994	600
800	0.982494	0.970720	0.959861	0.949517	0.939535	0.929836	0.920373	0.911114	0.902038	0.893128	0.884371	0.875758	800
1000	0.985983	0.976524	0.967778	0.959426	0.951346	0.943478	0.935782	0.928236	0.920822	0.913527	0.906342	0.899259	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 2(续) $\Lambda_\alpha(p, m_1, m_2)$

$p=8$	m_2												$\alpha=0.05$
m_1	1	2	3	4	5	6	7	8	9	10	11	12	m_2
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	2
3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3
4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4
5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5
6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	6
7	0.000138	0.000015	0.000004	0.000001	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	7
8	0.003295	0.000393	0.000090	0.000029	0.000012	0.000006	0.000003	0.000002	0.000001	0.000001	0.000001	0.000000	8
9	0.017079	0.002631	0.000659	0.000218	0.000087	0.000040	0.000020	0.000011	0.000007	0.000004	0.000003	0.000002	9
10	0.043574	0.008626	0.002458	0.000872	0.000361	0.000168	0.000086	0.000047	0.000028	0.000017	0.000011	0.000008	10
11	0.078039	0.019031	0.006148	0.002365	0.001032	0.000497	0.000259	0.000144	0.000085	0.000052	0.000034	0.000023	11
12	0.115676	0.033314	0.012011	0.004993	0.002304	0.001155	0.000619	0.000351	0.000209	0.000130	0.000084	0.000056	12
13	0.153630	0.050518	0.019990	0.008908	0.004335	0.002263	0.001252	0.000727	0.000441	0.000278	0.000181	0.000122	13
14	0.190453	0.065716	0.029839	0.014129	0.007216	0.003915	0.002234	0.001331	0.000824	0.000527	0.000347	0.000235	14
15	0.225477	0.090151	0.041241	0.020590	0.010980	0.006173	0.003628	0.002215	0.001399	0.000910	0.000608	0.000416	15
16	0.258443	0.111245	0.053875	0.028171	0.015610	0.009065	0.005476	0.003422	0.002203	0.001457	0.000987	0.000683	16
17	0.289300	0.132575	0.067447	0.036729	0.021061	0.012594	0.007801	0.004982	0.003269	0.002197	0.001509	0.001057	17
18	0.318105	0.153836	0.081699	0.046115	0.027265	0.016740	0.010611	0.006915	0.004617	0.003151	0.002194	0.001555	18
19	0.344966	0.174814	0.096415	0.056185	0.034144	0.021472	0.013900	0.009228	0.006265	0.004339	0.003060	0.002194	19
20	0.370015	0.195359	0.111416	0.066805	0.041616	0.026747	0.017653	0.011923	0.008219	0.005771	0.004120	0.002987	20
21	0.393387	0.215374	0.126559	0.077857	0.049601	0.032519	0.021845	0.014991	0.010483	0.007456	0.005386	0.003946	21

22	0.415217	0.234796	0.141726	0.089233	0.058021	0.038737	0.026450	0.018419	0.013053	0.009397	0.006863	0.005078	22
23	0.435632	0.253588	0.156826	0.100843	0.066804	0.045350	0.031435	0.022192	0.015923	0.011593	0.008555	0.006390	23
24	0.454749	0.271732	0.171785	0.112606	0.075884	0.052311	0.036769	0.026287	0.019081	0.014041	0.010467	0.007885	24
25	0.472677	0.289225	0.186549	0.124457	0.085199	0.059573	0.042416	0.030685	0.022515	0.016733	0.012583	0.009565	25
26	0.489514	0.306072	0.201075	0.136338	0.094698	0.067091	0.048346	0.035361	0.026210	0.019663	0.014914	0.011428	26
27	0.505352	0.322285	0.215331	0.148203	0.104332	0.074826	0.054525	0.040293	0.030150	0.022818	0.017449	0.013472	27
28	0.520271	0.337880	0.229293	0.160010	0.114060	0.082739	0.060924	0.045457	0.034319	0.026189	0.020182	0.015694	28
29	0.534345	0.352879	0.242945	0.171728	0.123844	0.090796	0.067514	0.050831	0.038700	0.029764	0.023104	0.018089	29
30	0.547639	0.367302	0.256277	0.183330	0.133653	0.098987	0.074268	0.056394	0.043276	0.033529	0.026207	0.020651	30
40	0.648630	0.484826	0.371902	0.289857	0.228618	0.182082	0.146235	0.118316	0.096365	0.078964	0.065068	0.053897	40
60	0.757690	0.627279	0.527185	0.447009	0.381482	0.327255	0.281978	0.243910	0.211718	0.184362	0.161015	0.141011	60
80	0.815243	0.708843	0.622840	0.550577	0.488795	0.435425	0.388992	0.348380	0.312704	0.281253	0.253441	0.228779	80
100	0.850742	0.761330	0.686819	0.622411	0.565838	0.515687	0.470954	0.430871	0.394827	0.362322	0.332935	0.306310	100
120	0.874811	0.797857	0.732425	0.674791	0.623251	0.576764	0.534599	0.496197	0.461114	0.428982	0.399491	0.372376	120
140	0.892201	0.824719	0.766516	0.714559	0.667497	0.624521	0.585067	0.548712	0.515117	0.484002	0.455129	0.428296	140
170	0.910793	0.853874	0.804039	0.758920	0.717494	0.679163	0.643522	0.610267	0.579158	0.549999	0.522621	0.496881	170
200	0.923918	0.874725	0.831204	0.791410	0.754525	0.720081	0.687764	0.657345	0.628642	0.601508	0.575820	0.551470	200
240	0.936396	0.894758	0.857556	0.823223	0.791114	0.760867	0.732246	0.705079	0.679234	0.654605	0.631100	0.608645	240
320	0.952100	0.920269	0.891472	0.864586	0.839159	0.814944	0.791784	0.769570	0.748216	0.727659	0.707843	0.688723	320
440	0.965057	0.941534	0.920045	0.899793	0.880463	0.861889	0.843968	0.826629	0.809821	0.793502	0.777641	0.762209	440
600	0.974316	0.956873	0.940825	0.925599	0.910972	0.896826	0.883093	0.869724	0.856684	0.843948	0.831494	0.819306	600
800	0.980707	0.967524	0.955338	0.943721	0.932512	0.921624	0.911008	0.900630	0.890464	0.880494	0.870704	0.861085	800
1000	0.984551	0.973956	0.964134	0.954746	0.945661	0.936815	0.928167	0.919691	0.911367	0.903183	0.895128	0.887192	1000
∞	1.000000	1.000000	1.000000	1.000000	1								

附表 3 $L(p, v)$ 表

设 X_1, \dots, X_n 是来自总体 $N_p(\mu, \Sigma)$ 的样品, 欲检验假设

$$H_0: \Sigma = \Sigma_0; \quad H_1: \Sigma \neq \Sigma_0$$

其中 Σ_0 为已知的正定阵。其似然比修正统计量为:

$$L(P, v) = v[\ln |\Sigma_0|] - P - \ln |\hat{\Sigma}| + \text{tr}(\hat{\Sigma}\Sigma_0^{-1})$$

其中 $v = n - 1$, $\hat{\Sigma}$ 为 Σ 的无偏估计。当 n 较大时, 附表 3 没有列出相应的临界值, 这时可用 χ^2 分布或 F 分布来近似。

附表 $L(p, v)$ 上的 α 分位点 $L_\alpha(p, v)$ 。

例: 当 $p=4$, $n=15$ 时,

$$L_{0.05}(4, 15-1) = 20.77$$

v	5%	1%	v	5%	1%	v	5%	1%	v	5%	1%	v	5%	1%	v	5%	1%
$p=2$			$p=3$			$p=4$			$p=5$			$p=6$					
2	13.50	19.95	4	18.8	25.6	7	25.8	30.8	9	32.5	40.0	12	40.9	49.0			
3	10.64	15.56	5	16.82	22.68	8	24.06	29.33	10	31.4	38.6	13	40.0	47.8			
4	9.69	14.13				9	23.00	28.36				14	39.3	47.0			
5	9.22	13.42	6	15.81	21.23	10	22.28	27.66	11	30.55	37.51	15	38.7	46.2			
			7	15.19	20.36				12	29.92	36.72						
6	8.94	13.00	8	14.77	19.78	11	21.75	27.13	13	29.42	36.09	16	38.22	45.65			
7	8.75	12.73	9	14.47	19.36	12	21.35	26.71	14	29.02	35.57	17	37.81	45.13			
8	8.62	12.53	10	14.24	19.04	13	21.03	26.38	15	28.68	35.15	18	37.45	44.70			
9	8.52	12.38				14	20.77	26.10				19	37.14	44.32			
10	8.44	12.26	11	14.06	18.80	15	20.56	25.87	16	28.4	34.79	20	36.87	43.99			
			12	13.92	18.61				17	28.15	34.49	21	36.63	43.69			
			13	13.80	18.45				18	27.94	34.23						
			14	13.70	18.31				19	27.76	34.00	22	36.41	43.43			
			15	13.62	18.20				20	27.60	33.79	24	36.05	42.99			
												26	35.75	42.63			
												28	35.49	42.32			
												30	35.28	42.07			

附表 3 (续) $L(p, v)$ 表

v	5%	1%	v	5%	1%	v	5%	1%	v	5%	1%	v	5%	1%
$p=7$			$p=8$			$p=9$			$p=10$					
18	48.6	56.9	24	58.4	67.1	28	70.1	79.6	34	82.3	92.4			
19	48.2	56.3	26	57.7	66.3	30	69.4	78.8	36	81.7	91.8			
20	47.7	55.8	28	57.09	65.68				38	81.2	91.2			
21	47.34	55.36	30	56.61	65.12	32	68.8	78.17	40	80.7	90.7			
22	47.00	54.96				34	68.34	77.60						
						36	67.91	77.08	45	79.83	89.63			
24	46.43	54.28	32	56.20	64.64	38	67.53	76.65	50	79.13	88.83			
26	45.97	53.73	34	55.84	64.23	40	67.21	76.29	55	78.57	88.20			
28	45.58	53.27	36	55.54	63.87				60	78.13	87.68			
30	45.25	52.88	38	55.26	63.55	45	66.54	75.51	65	77.75	87.26			
32	44.97	52.55	40	55.03	63.28	50	66.02	74.92						
34	44.73	52.27				55	65.61	74.44	70	77.44	86.89			
						60	65.28	74.06	75	77.18	86.59			

附表 4 $M(p, v_0, r)$ 表

设 r 个总体的分布分别为 $N_p(\mu^{(i)}, \Sigma_i) (1 \leq i \leq r)$, 今分别抽了 n_1, \dots, n_r 个样品: $X_1^{(1)}, \dots, X_{n_1}^{(1)}, \dots, X_1^{(r)}, \dots, X_{n_r}^{(r)}$, 要检验假设

$$H_0: \Sigma_1 = \dots = \Sigma_r; H_1: \text{至少存在 } \Sigma_i \neq \Sigma_j$$

检验这个假设的修正似然比统计量为:

$$M = (n-r) \ln \left| \frac{S}{(n-r)} \right| - \sum_{i=1}^r (n_i - 1) \ln \left| \frac{S_i}{(n_i - 1)} \right|$$

其中, $n = n_1 + \dots + n_r$

$$X^{(i)} = \frac{1}{n_i} \sum_{j=1}^{n_i} X_j^{(i)}$$

$$S_i = \sum_{j=1}^{n_i} (X_j^{(i)} - X^{(i)}) (X_j^{(i)} - X^{(i)})'$$

$$S = S_1 + \dots + S_r$$

当 $n_1 = n_2 = \dots = n_r = n_0$ 时, 可用附表 4, 表中 $v_0 = n_0 - 1$ 。当 $\{n_i\}$ 互不相当或较大时, 可用 χ^2 分布或 F 分布来近似。附表 4 中只给出 $\alpha = 0.05$ 的上分位点。

例: $M(3, 6, 4) = 38.06$ $M(5, 16, 5) = 91.95$

$(\alpha=5\%)$									
r	2	3	4	5	6	7	8	9	10
v_0									
$p=2$									
3	12.18	18.70	24.55	30.09	35.45	40.68	45.81	50.87	55.87
4	10.70	16.65	22.00	27.07	31.97	36.76	41.45	46.07	50.64
5	9.97	15.63	20.73	25.56	30.23	34.79	39.26	43.67	48.02
6	9.53	15.02	19.97	24.66	29.19	33.61	37.95	42.22	46.45
7	9.24	14.62	19.46	24.05	28.49	32.82	37.07	41.26	45.40
8	9.04	14.33	19.10	23.62	27.99	32.26	36.45	40.57	44.65
9	8.88	14.11	18.83	23.30	27.62	31.84	35.98	40.06	44.08
10	8.76	13.94	18.61	23.05	27.33	31.51	35.61	39.65	43.64
$p=3$									
5	19.2	30.5	41.0	51.0	60.7	70.3	79.7	89.0	98.3
6	17.57	28.24	38.06	47.49	56.68	65.69	74.58	83.37	92.09
7	16.59	26.84	36.29	45.37	54.21	62.89	71.45	79.91	88.29

附表 4 (续) $M(p, v_0, r)$ 表 $(\alpha=5\%)$

r	2	3	4	5	6	7	8	9	10		
v_0											
8	15.93	25.90	35.10	43.93	52.54	60.99	69.33	77.56	85.72		
9	15.46	25.22	34.24	42.90	51.34	59.62	67.79	75.86	83.86		
10	15.11	24.71	33.59	42.11	50.42	58.58	66.62	74.57	82.45		
11	14.83	24.31	33.08	41.50	49.71	57.76	65.71	73.56	81.35		
12	14.61	23.99	32.67	41.01	49.13	57.11	64.97	72.75	80.46		
13	14.43	23.73	32.33	40.60	48.66	56.57	64.37	72.08	79.72		
$p=4$											
6	30.07	48.63	65.91	82.6	98.9	115.0	131.0	—	—		
7	27.31	44.69	60.90	76.56	91.89	107.0	121.9	137.0	152.0		
8	25.61	42.24	57.77	72.78	87.46	101.9	116.2	130.4	144.6		
9	24.46	40.56	55.62	70.17	84.42	98.45	112.3	126.1	139.8		
10	23.62	39.34	54.05	68.27	82.19	95.91	109.5	122.9	136.3		
11	22.98	38.41	52.85	66.81	80.49	93.95	107.3	120.5	133.6		
12	22.48	37.67	51.90	65.66	79.14	92.41	105.5	118.5	131.5		
13	22.08	37.08	51.13	64.73	78.04	91.16	104.1	117.0	129.7		
14	21.75	36.59	50.50	63.96	77.14	90.12	103.0	115.7	128.3		
15	21.47	36.17	49.97	63.31	76.38	89.25	102.0	114.6	127.1		
r	2	3	4	5	6	7	r	2	3	4	5
v_0							v_0				
$p=5$						$p=6$					
8	39.29	65.15	89.46	113.0	—	—	10	49.95	84.43	117.0	—
9	36.70	61.40	84.63	107.2	129.3	151.5					
10	34.92	58.79	81.25	103.1	124.5	145.7	11	47.43	80.69	112.2	142.9
							12	45.56	77.90	108.6	138.4
11	33.62	56.86	78.76	100.0	120.9	141.6	13	44.11	75.74	105.7	135.0
12	32.62	55.37	76.83	97.68	118.2	138.4	14	42.96	74.01	103.5	132.2
13	31.83	54.19	75.30	95.81	116.0	135.9	15	42.03	72.59	101.6	129.9
14	31.19	53.24	74.06	94.29	114.2	133.8	16	41.25	71.41	100.1	128.0
15	30.66	52.44	73.02	93.03	112.7	132.1	17	40.59	70.41	98.75	126.4
							18	40.02	69.55	97.63	125.0
16	30.21	51.77	72.14	91.95	111.4	130.6	19	39.53	68.80	96.64	123.8
							20	39.11	68.14	95.78	122.7