ภาคผนวก ข

ตารางสถิติทดสอบ
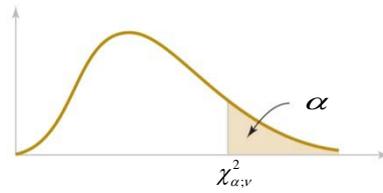
ตารางที่ 1 การแจกแจงไคกำลังสอง

|	α										
ν	.995	.990	.975	.950	.900	.500	.100	.050	.025	.010	.005
1	0.0^4393	0.0^3157	0.0^2982	0.0039	0.0158	0.4549	2.7055	3.8415	5.0239	6.6349	7.8794
2	0.0100	0.0201	0.0506	0.1026	0.2107	1.3863	4.6052	5.9915	7.3778	9.2103	10.597
3	0.0717	0.1148	0.2158	0.3518	0.5844	2.3660	6.2514	7.8147	9.3484	11.345	12.838
4	0.2070	0.2971	0.4844	0.7107	1.0636	3.3567	7.7794	9.4877	11.143	13.277	14.860
5	0.4117	0.5543	0.8312	1.1455	1.6103	4.3515	9.2364	11.070	12.833	15.086	16.750
6	0.6757	0.8721	1.2373	1.6354	2.2041	5.3481	10.645	12.592	14.449	16.812	18.548
7	0.9893	1.2390	1.6899	2.1673	2.8331	6.3458	12.017	14.067	16.013	18.475	20.278
8	1.3444	1.6465	2.1797	2.7326	3.4895	7.3441	13.362	15.507	17.535	20.090	21.955
9	1.7349	2.0879	2.7004	3.3251	4.1682	8.3428	14.684	16.919	19.023	21.666	23.589
10	2.1559	2.5582	3.2470	3.9403	4.8652	9.3418	15.987	18.307	20.483	23.209	25.188
11	2.6032	3.0535	3.8157	4.5748	5.5778	10.341	17.275	19.675	21.920	24.725	26.757
12	3.0738	3.5706	4.4038	5.2260	6.3038	11.340	18.549	21.026	23.337	26.217	28.300
13	3.5650	4.1069	5.0088	5.8919	7.0415	12.340	19.812	22.362	24.736	27.688	29.819
14	4.0747	4.6604	5.6287	6.5706	7.7895	13.339	21.064	23.685	26.119	29.141	31.319
15	4.6009	5.2293	6.2621	7.2609	8.5468	14.339	22.307	24.996	27.488	30.578	32.801
16	5.1422	5.8122	6.9077	7.9616	9.3122	15.338	23.542	26.296	28.845	32.000	34.267
17	5.6972	6.4078	7.5642	8.6718	10.085	16.338	24.769	27.587	30.191	33.409	35.718
18	6.2648	7.0149	8.2307	9.3905	10.865	17.338	25.989	28.869	31.526	34.805	37.156
19	6.8440	7.6327	8.9065	10.117	11.651	18.338	27.204	30.144	32.852	36.191	38.582
20	7.4338	8.2604	9.5908	10.851	12.443	19.337	28.412	31.410	34.170	37.566	39.997
21	8.0337	8.8972	10.283	11.591	13.240	20.337	29.615	32.671	35.479	38.932	41.401
22	8.6427	9.5425	10.982	12.338	14.041	21.337	30.813	33.924	36.781	40.289	42.796
23	9.2604	10.196	11.689	13.091	14.848	22.337	32.007	35.172	38.076	41.638	44.181
24	9.8862	10.856	12.401	13.848	15.659	23.337	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	24.337	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	25.336	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	26.336	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	27.336	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	28.336	39.087	42.557	45.722	49.588	52.336
30	13.787	14.953	16.791	18.493	20.599	29.336	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	39.335	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	49.335	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	59.335	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	69.334	85.527	90.531	95.023	100.43	104.21
80	51.172	53.540	57.153	60.391	64.278	79.334	96.578	101.88	106.63	112.33	116.32
90	59.196	61.754	65.647	69.126	73.291	89.334	107.57	113.15	118.14	124.12	128.30
100	67.328	70.065	74.222	77.929	82.358	99.334	118.50	124.34	129.56	135.81	140.17
250	196.16	200.94	208.10	214.39	221.81	249.33	279.05	287.88	295.69	304.94	311.35
500	422.30	429.39	439.94	449.15	459.93	499.33	540.93	553.13	563.85	576.49	585.21

ผลิตโดยโปรแกรมอาร์ เวอร์ชัน 3.2.2

$\alpha = 0.01$

$F_{0.01;v_1,v_2}$
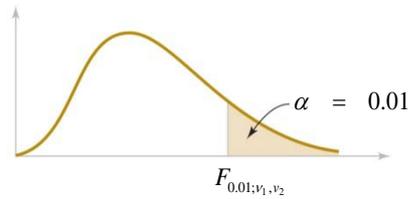
ตารางที่ 4 การแจกแจงเอฟ (ต่อ) ที่ระดับนัยสำคัญ 0.01

v_2	v_1
	1	2	3	4	5	6	7	8	9	10	11	12
1	4052.2	4999.5	5403.4	5624.6	5763.6	5859.0	5928.4	5981.1	6022.5	6055.8	6083.3	6106.3
2	98.503	99.000	99.166	99.249	99.299	99.333	99.356	99.374	99.388	99.399	99.408	99.416
3	34.116	30.817	29.457	28.710	28.237	27.911	27.672	27.489	27.345	27.229	27.133	27.052
4	21.198	18.000	16.694	15.977	15.522	15.207	14.976	14.799	14.659	14.546	14.452	14.374
5	16.258	13.274	12.060	11.392	10.967	10.672	10.456	10.289	10.158	10.051	9.9626	9.8883
6	13.745	10.925	9.7795	9.1483	8.7459	8.4661	8.2600	8.1017	7.9761	7.8741	7.7896	7.7183
7	12.246	9.5466	8.4513	7.8466	7.4604	7.1914	6.9928	6.8400	6.7188	6.6201	6.5382	6.4691
8	11.259	8.6491	7.5910	7.0061	6.6318	6.3707	6.1776	6.0289	5.9106	5.8143	5.7343	5.6667
9	10.561	8.0215	6.9919	6.4221	6.0569	5.8018	5.6129	5.4671	5.3511	5.2565	5.1779	5.1114
10	10.044	7.5594	6.5523	5.9943	5.6363	5.3858	5.2001	5.0567	4.9424	4.8491	4.7715	4.7059
11	9.6460	7.2057	6.2167	5.6683	5.3160	5.0692	4.8861	4.7445	4.6315	4.5393	4.4624	4.3974
12	9.3302	6.9266	5.9525	5.4120	5.0643	4.8206	4.6395	4.4994	4.3875	4.2961	4.2198	4.1553
13	9.0738	6.7010	5.7394	5.2053	4.8616	4.6204	4.4410	4.3021	4.1911	4.1003	4.0245	3.9603
14	8.8616	6.5149	5.5639	5.0354	4.6950	4.4558	4.2779	4.1399	4.0297	3.9394	3.8640	3.8001
15	8.6831	6.3589	5.4170	4.8932	4.5556	4.3183	4.1415	4.0045	3.8948	3.8049	3.7299	3.6662
16	8.5310	6.2262	5.2922	4.7726	4.4374	4.2016	4.0259	3.8896	3.7804	3.6909	3.6162	3.5527
17	8.3997	6.1121	5.1850	4.6690	4.3359	4.1015	3.9267	3.7910	3.6822	3.5931	3.5185	3.4552
18	8.2854	6.0129	5.0919	4.5790	4.2479	4.0146	3.8406	3.7054	3.5971	3.5082	3.4338	3.3706
19	8.1849	5.9259	5.0103	4.5003	4.1708	3.9386	3.7653	3.6305	3.5225	3.4338	3.3596	3.2965
20	8.0960	5.8489	4.9382	4.4307	4.1027	3.8714	3.6987	3.5644	3.4567	3.3682	3.2941	3.2311
21	8.0166	5.7804	4.8740	4.3688	4.0421	3.8117	3.6396	3.5056	3.3981	3.3098	3.2359	3.1730
22	7.9454	5.7190	4.8166	4.3134	3.9880	3.7583	3.5867	3.4530	3.3458	3.2576	3.1837	3.1209
23	7.8811	5.6637	4.7649	4.2636	3.9392	3.7102	3.5390	3.4057	3.2986	3.2106	3.1368	3.0740
24	7.8229	5.6136	4.7181	4.2184	3.8951	3.6667	3.4959	3.3629	3.2560	3.1681	3.0944	3.0316
25	7.7698	5.5680	4.6755	4.1774	3.8550	3.6272	3.4568	3.3239	3.2172	3.1294	3.0558	2.9931
26	7.7213	5.5263	4.6366	4.1400	3.8183	3.5911	3.4210	3.2884	3.1818	3.0941	3.0205	2.9578
27	7.6767	5.4881	4.6009	4.1056	3.7848	3.5580	3.3882	3.2558	3.1494	3.0618	2.9882	2.9256
28	7.6356	5.4529	4.5681	4.0740	3.7539	3.5276	3.3581	3.2259	3.1195	3.0320	2.9585	2.8959
29	7.5977	5.4204	4.5378	4.0449	3.7254	3.4995	3.3303	3.1982	3.0920	3.0045	2.9311	2.8685
30	7.5625	5.3903	4.5097	4.0179	3.6990	3.4735	3.3045	3.1726	3.0665	2.9791	2.9057	2.8431
40	7.3141	5.1785	4.3126	3.8283	3.5138	3.2910	3.1238	2.9930	2.8876	2.8005	2.7274	2.6648
50	7.1706	5.0566	4.1993	3.7195	3.4077	3.1864	3.0202	2.8900	2.7850	2.6981	2.6250	2.5625
60	7.0771	4.9774	4.1259	3.6490	3.3389	3.1187	2.9530	2.8233	2.7185	2.6318	2.5587	2.4961
70	7.0114	4.9219	4.0744	3.5996	3.2907	3.0712	2.9060	2.7765	2.6719	2.5852	2.5122	2.4496
80	6.9627	4.8807	4.0363	3.5631	3.2550	3.0361	2.8713	2.7420	2.6374	2.5508	2.4777	2.4151
90	6.9251	4.8491	4.0070	3.5350	3.2276	3.0091	2.8445	2.7154	2.6109	2.5243	2.4513	2.3886
100	6.8953	4.8239	3.9837	3.5127	3.2059	2.9877	2.8233	2.6943	2.5898	2.5033	2.4302	2.3676
250	6.7373	4.6911	3.8609	3.3950	3.0912	2.8748	2.7114	2.5830	2.4789	2.3925	2.3193	2.2565
500	6.6858	4.6478	3.8210	3.3569	3.0540	2.8381	2.6751	2.5469	2.4429	2.3565	2.2833	2.2204
∞	6.6349	4.6052	3.7816	3.3192	3.0173	2.8020	2.6393	2.5113	2.4073	2.3209	2.2477	2.1847

ผลิตโดยโปรแกรมอาร์ เวอร์ชัน 3.2.2

$\alpha = 0.05$

$F_{0.05; v_1, v_2}$
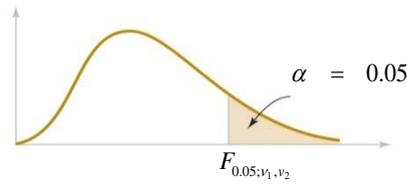
ตารางที่ 4 การแจกแจงเอฟ (ต่อ) ที่ระดับนัยสำคัญ 0.05

v_2	v_1											
	1	2	3	4	5	6	7	8	9	10	11	12
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	242.98	243.91
2	18.513	19.000	19.164	19.247	19.296	19.330	19.353	19.371	19.385	19.396	19.405	19.413
3	10.128	9.5521	9.2766	9.1172	9.0135	8.9406	8.8867	8.8452	8.8123	8.7855	8.7633	8.7446
4	7.7086	6.9443	6.5914	6.3882	6.2561	6.1631	6.0942	6.0410	5.9988	5.9644	5.9358	5.9117
5	6.6079	5.7861	5.4095	5.1922	5.0503	4.9503	4.8759	4.8183	4.7725	4.7351	4.7040	4.6777
6	5.9874	5.1433	4.7571	4.5337	4.3874	4.2839	4.2067	4.1468	4.0990	4.0600	4.0274	3.9999
7	5.5914	4.7374	4.3468	4.1203	3.9715	3.8660	3.7870	3.7257	3.6767	3.6365	3.6030	3.5747
8	5.3177	4.4590	4.0662	3.8379	3.6875	3.5806	3.5005	3.4381	3.3881	3.3472	3.3130	3.2839
9	5.1174	4.2565	3.8625	3.6331	3.4817	3.3738	3.2927	3.2296	3.1789	3.1373	3.1025	3.0729
10	4.9646	4.1028	3.7083	3.4781	3.3258	3.2172	3.1355	3.0717	3.0204	2.9782	2.9430	2.9130
11	4.8443	3.9823	3.5874	3.3567	3.2039	3.0946	3.0123	2.9480	2.8962	2.8536	2.8179	2.7876
12	4.7472	3.8853	3.4903	3.2592	3.1059	2.9961	2.9134	2.8486	2.7964	2.7534	2.7173	2.6866
13	4.6672	3.8056	3.4105	3.1791	3.0254	2.9153	2.8321	2.7669	2.7144	2.6710	2.6347	2.6037
14	4.6001	3.7389	3.3439	3.1123	2.9582	2.8477	2.7642	2.6987	2.6458	2.6022	2.5655	2.5342
15	4.5431	3.6823	3.2874	3.0556	2.9013	2.7905	2.7066	2.6408	2.5876	2.5437	2.5068	2.4753
16	4.4940	3.6337	3.2389	3.0069	2.8524	2.7413	2.6572	2.5911	2.5377	2.4935	2.4564	2.4247
17	4.4513	3.5915	3.1968	2.9647	2.8100	2.6987	2.6143	2.5480	2.4943	2.4499	2.4126	2.3807
18	4.4139	3.5546	3.1599	2.9277	2.7729	2.6613	2.5767	2.5102	2.4563	2.4117	2.3742	2.3421
19	4.3808	3.5219	3.1274	2.8951	2.7401	2.6283	2.5435	2.4768	2.4227	2.3779	2.3402	2.3080
20	4.3512	3.4928	3.0984	2.8661	2.7109	2.5990	2.5140	2.4471	2.3928	2.3479	2.3100	2.2776
21	4.3248	3.4668	3.0725	2.8401	2.6848	2.5727	2.4876	2.4205	2.3660	2.3210	2.2829	2.2504
22	4.3010	3.4434	3.0491	2.8167	2.6613	2.5491	2.4638	2.3965	2.3419	2.2967	2.2585	2.2258
23	4.2793	3.4221	3.0280	2.7955	2.6400	2.5277	2.4422	2.3748	2.3201	2.2747	2.2364	2.2036
24	4.2597	3.4028	3.0088	2.7763	2.6207	2.5082	2.4226	2.3551	2.3002	2.2547	2.2163	2.1834
25	4.2417	3.3852	2.9912	2.7587	2.6030	2.4904	2.4047	2.3371	2.2821	2.2365	2.1979	2.1649
26	4.2252	3.3690	2.9752	2.7426	2.5868	2.4741	2.3883	2.3205	2.2655	2.2197	2.1811	2.1479
27	4.2100	3.3541	2.9604	2.7278	2.5719	2.4591	2.3732	2.3053	2.2501	2.2043	2.1655	2.1323
28	4.1960	3.3404	2.9467	2.7141	2.5581	2.4453	2.3593	2.2913	2.2360	2.1900	2.1512	2.1179
29	4.1830	3.3277	2.9340	2.7014	2.5454	2.4324	2.3463	2.2783	2.2229	2.1768	2.1379	2.1045
30	4.1709	3.3158	2.9223	2.6896	2.5336	2.4205	2.3343	2.2662	2.2107	2.1646	2.1256	2.0921
40	4.0847	3.2317	2.8387	2.6060	2.4495	2.3359	2.2490	2.1802	2.1240	2.0772	2.0376	2.0035
50	4.0343	3.1826	2.7900	2.5572	2.4004	2.2864	2.1992	2.1299	2.0734	2.0261	1.9861	1.9515
60	4.0012	3.1504	2.7581	2.5252	2.3683	2.2541	2.1665	2.0970	2.0401	1.9926	1.9522	1.9174
70	3.9778	3.1277	2.7355	2.5027	2.3456	2.2312	2.1435	2.0737	2.0166	1.9689	1.9283	1.8932
80	3.9604	3.1108	2.7188	2.4859	2.3287	2.2142	2.1263	2.0564	1.9991	1.9512	1.9105	1.8753
90	3.9469	3.0977	2.7058	2.4729	2.3157	2.2011	2.1131	2.0430	1.9856	1.9376	1.8967	1.8613
100	3.9361	3.0873	2.6955	2.4626	2.3053	2.1906	2.1025	2.0323	1.9748	1.9267	1.8857	1.8503
250	3.8789	3.0319	2.6407	2.4078	2.2501	2.1350	2.0463	1.9756	1.9174	1.8687	1.8271	1.7910
500	3.8601	3.0138	2.6227	2.3898	2.2320	2.1167	2.0279	1.9569	1.8986	1.8496	1.8078	1.7716
∞	3.8415	2.9957	2.6049	2.3719	2.2141	2.0986	2.0096	1.9384	1.8799	1.8307	1.7886	1.7522

ผลิตโดยโปรแกรมอาร์ เวอร์ชัน 3.2.2

$\alpha\ =\ 0.10$

$F_{0.10;\nu_1,\nu_2}$
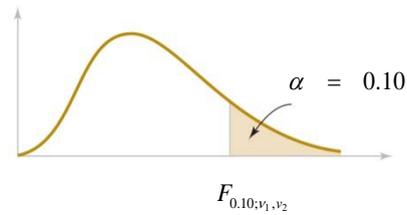
ตารางที่ 2 การแจกแจงเอฟ ที่ระดับนัยสำคัญ 0.1

ν_2	ν_1											
	1	2	3	4	5	6	7	8	9	10	11	12
1	39.863	49.500	53.593	55.833	57.240	58.204	58.906	59.439	59.858	60.195	60.473	60.705
2	8.5263	9.0000	9.1618	9.2434	9.2926	9.3255	9.3491	9.3668	9.3805	9.3916	9.4006	9.4081
3	5.5383	5.4624	5.3908	5.3426	5.3092	5.2847	5.2662	5.2517	5.2400	5.2304	5.2224	5.2156
4	4.5448	4.3246	4.1909	4.1073	4.0506	4.0097	3.9790	3.9549	3.9357	3.9199	3.9067	3.8955
5	4.0604	3.7797	3.6195	3.5202	3.4530	3.4045	3.3679	3.3393	3.3163	3.2974	3.2816	3.2682
6	3.7760	3.4633	3.2888	3.1808	3.1075	3.0546	3.0145	2.9830	2.9577	2.9369	2.9195	2.9047
7	3.5894	3.2574	3.0741	2.9605	2.8833	2.8274	2.7849	2.7516	2.7247	2.7025	2.6839	2.6681
8	3.4579	3.1131	2.9238	2.8064	2.7264	2.6683	2.6241	2.5893	2.5612	2.5380	2.5186	2.5020
9	3.3603	3.0065	2.8129	2.6927	2.6106	2.5509	2.5053	2.4694	2.4403	2.4163	2.3961	2.3789
10	3.2850	2.9245	2.7277	2.6053	2.5216	2.4606	2.4140	2.3772	2.3473	2.3226	2.3018	2.2841
11	3.2252	2.8595	2.6602	2.5362	2.4512	2.3891	2.3416	2.3040	2.2735	2.2482	2.2269	2.2087
12	3.1765	2.8068	2.6055	2.4801	2.3940	2.3310	2.2828	2.2446	2.2135	2.1878	2.1660	2.1474
13	3.1362	2.7632	2.5603	2.4337	2.3467	2.2830	2.2341	2.1954	2.1638	2.1376	2.1155	2.0966
14	3.1022	2.7265	2.5222	2.3947	2.3069	2.2426	2.1931	2.1539	2.1220	2.0954	2.0730	2.0537
15	3.0732	2.6952	2.4898	2.3614	2.2730	2.2081	2.1582	2.1185	2.0862	2.0593	2.0366	2.0171
16	3.0481	2.6682	2.4618	2.3327	2.2438	2.1783	2.1280	2.0880	2.0553	2.0281	2.0051	1.9854
17	3.0262	2.6446	2.4374	2.3077	2.2183	2.1524	2.1017	2.0613	2.0284	2.0009	1.9777	1.9577
18	3.0070	2.6239	2.4160	2.2858	2.1958	2.1296	2.0785	2.0379	2.0047	1.9770	1.9535	1.9333
19	2.9899	2.6056	2.3970	2.2663	2.1760	2.1094	2.0580	2.0171	1.9836	1.9557	1.9321	1.9117
20	2.9747	2.5893	2.3801	2.2489	2.1582	2.0913	2.0397	1.9985	1.9649	1.9367	1.9129	1.8924
21	2.9610	2.5746	2.3649	2.2333	2.1423	2.0751	2.0233	1.9819	1.9480	1.9197	1.8956	1.8750
22	2.9486	2.5613	2.3512	2.2193	2.1279	2.0605	2.0084	1.9668	1.9327	1.9043	1.8801	1.8593
23	2.9374	2.5493	2.3387	2.2065	2.1149	2.0472	1.9949	1.9531	1.9189	1.8903	1.8659	1.8450
24	2.9271	2.5383	2.3274	2.1949	2.1030	2.0351	1.9826	1.9407	1.9063	1.8775	1.8530	1.8319
25	2.9177	2.5283	2.3170	2.1842	2.0922	2.0241	1.9714	1.9292	1.8947	1.8658	1.8412	1.8200
26	2.9091	2.5191	2.3075	2.1745	2.0822	2.0139	1.9610	1.9188	1.8841	1.8550	1.8303	1.8090
27	2.9012	2.5106	2.2987	2.1655	2.0730	2.0045	1.9515	1.9091	1.8743	1.8451	1.8203	1.7989
28	2.8938	2.5028	2.2906	2.1571	2.0645	1.9959	1.9427	1.9001	1.8652	1.8359	1.8110	1.7895
29	2.8870	2.4955	2.2831	2.1494	2.0566	1.9878	1.9345	1.8918	1.8568	1.8274	1.8024	1.7808
30	2.8807	2.4887	2.2761	2.1422	2.0492	1.9803	1.9269	1.8841	1.8490	1.8195	1.7944	1.7727
40	2.8354	2.4404	2.2261	2.0910	1.9968	1.9269	1.8725	1.8289	1.7929	1.7627	1.7369	1.7146
50	2.8087	2.4120	2.1967	2.0608	1.9660	1.8954	1.8405	1.7963	1.7598	1.7292	1.7029	1.6802
60	2.7911	2.3933	2.1774	2.0410	1.9457	1.8747	1.8194	1.7748	1.7380	1.7070	1.6805	1.6574
70	2.7786	2.3800	2.1637	2.0269	1.9313	1.8600	1.8044	1.7596	1.7225	1.6913	1.6645	1.6413
80	2.7693	2.3701	2.1535	2.0165	1.9206	1.8491	1.7933	1.7483	1.7110	1.6796	1.6526	1.6292
90	2.7621	2.3625	2.1457	2.0084	1.9123	1.8406	1.7847	1.7395	1.7021	1.6705	1.6434	1.6199
100	2.7564	2.3564	2.1394	2.0019	1.9057	1.8339	1.7778	1.7324	1.6949	1.6632	1.6360	1.6124
250	2.7257	2.3239	2.1058	1.9675	1.8705	1.7978	1.7409	1.6949	1.6567	1.6244	1.5965	1.5723
500	2.7156	2.3132	2.0948	1.9561	1.8588	1.7859	1.7288	1.6825	1.6441	1.6115	1.5835	1.5590
∞	2.7055	2.3026	2.0838	1.9449	1.8473	1.7741	1.7167	1.6702	1.6315	1.5987	1.5705	1.5458

ผลิตโดยโปรแกรมอาร์ เวอร์ชัน 3.2.2