

Pokahara University
Office of Controller of Examination



Statistical Table

(For use in Semester/Trimester/Yearly Examination)



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TABLE 1A: Cumulative Binomial Distribution

		p										
n	x	.01	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50
2	0	0.9801	0.9025	0.8100	0.7225	0.6400	0.5625	0.4900	0.4225	0.3600	0.3025	0.2500
	1	0.9999	0.9975	0.9900	0.9775	0.9600	0.9375	0.9100	0.8775	0.8400	0.7975	0.7500
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	0	0.97030	0.85738	0.729	0.61413	0.512	0.42187	0.343	0.27463	0.216	0.16638	0.125
	1	0.99970	0.99275	0.972	0.93925	0.896	0.84375	0.784	0.71825	0.648	0.57475	0.500
	2	1.00000	0.99988	0.999	0.99663	0.992	0.98437	0.973	0.95713	0.936	0.90887	0.875
	3	1.00000	1.00000	1.000	1.00000	1.000	1.00000	1.000	1.00000	1.000	1.00000	1.000
4	0	0.96060	0.81451	0.6561	0.52201	0.4096	0.31641	0.2401	0.17851	0.1296	0.09151	0.0625
	1	0.99941	0.98598	0.9477	0.89048	0.8192	0.73828	0.6517	0.56298	0.4752	0.39098	0.3125
	2	1.00000	0.99952	0.9963	0.98802	0.9728	0.94922	0.9163	0.87352	0.8208	0.75852	0.6875
	3	1.00000	0.99999	0.9999	0.99949	0.9984	0.99609	0.9919	0.98499	0.9744	0.95899	0.9375
	4	1.00000	1.00000	1.0000	1.00000	1.0000	1.00000	1.0000	1.00000	1.0000	1.00000	1.0000
5	0	0.95099	0.77378	0.59049	0.44371	0.32768	0.23730	0.16807	0.11603	0.07776	0.05033	0.03125
	1	0.99902	0.97741	0.91854	0.83521	0.73728	0.63281	0.52822	0.42842	0.33696	0.25622	0.18750
	2	0.99999	0.99884	0.99144	0.97339	0.94208	0.89648	0.83692	0.76483	0.68256	0.59313	0.50000
	3	1.00000	0.99997	0.99954	0.99777	0.99328	0.98437	0.96922	0.94598	0.91296	0.86878	0.81250
	4	1.00000	1.00000	0.99999	0.99992	0.99968	0.99902	0.99757	0.99475	0.98976	0.98155	0.96875
	5	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
6	0	0.94148	0.73509	0.53144	0.37715	0.26214	0.17798	0.11765	0.07542	0.04666	0.02768	0.01563
	1	0.99854	0.96723	0.88573	0.77648	0.65536	0.53394	0.42017	0.31908	0.23328	0.16357	0.10938
	2	0.99998	0.99777	0.98415	0.95266	0.90112	0.83057	0.74431	0.64709	0.54432	0.44152	0.34375
	3	1.00000	0.99991	0.99873	0.99411	0.98304	0.96240	0.92953	0.88258	0.82080	0.74474	0.65625
	4	1.00000	1.00000	0.99994	0.99960	0.99840	0.99536	0.98906	0.97768	0.95904	0.93080	0.89062
	5	1.00000	1.00000	1.00000	0.99999	0.99994	0.99976	0.99927	0.99816	0.99590	0.99170	0.98437
	6	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
7	0	0.93207	0.69834	0.47830	0.32058	0.20972	0.13348	0.08235	0.04902	0.02799	0.01522	0.00781
	1	0.99797	0.95562	0.85031	0.71658	0.57672	0.44495	0.32942	0.23380	0.15863	0.10242	0.06250
	2	0.99997	0.99624	0.97431	0.92623	0.85197	0.75641	0.64707	0.53228	0.41990	0.31644	0.22656
	3	1.00000	0.99981	0.99727	0.98790	0.96666	0.92944	0.87396	0.80015	0.71021	0.60829	0.50000
	4	1.00000	0.99999	0.99982	0.99878	0.99533	0.98712	0.97120	0.94439	0.90374	0.84707	0.77344
	5	1.00000	1.00000	0.99999	0.99993	0.99963	0.99866	0.99621	0.99099	0.98116	0.96429	0.93750
	6	1.00000	1.00000	1.00000	1.00000	0.99999	0.99994	0.99978	0.99936	0.99836	0.99626	0.99219
	7	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
8	0	0.92274	0.66342	0.43047	0.27249	0.16777	0.10011	0.05765	0.03186	0.01680	0.00837	0.00391
	1	0.99731	0.94276	0.81310	0.65718	0.50332	0.36708	0.25530	0.16913	0.10638	0.06318	0.03516
	2	0.99995	0.99421	0.96191	0.89479	0.79692	0.67854	0.55177	0.42781	0.31539	0.22013	0.14453
	3	1.00000	0.99963	0.99498	0.97865	0.94372	0.88618	0.80590	0.70640	0.59409	0.47696	0.36328
	4	1.00000	0.99998	0.99957	0.99715	0.98959	0.97270	0.94203	0.89391	0.82633	0.73962	0.63672
	5	1.00000	1.00000	0.99998	0.99976	0.99877	0.99577	0.98871	0.97468	0.95019	0.91154	0.85547
	6	1.00000	1.00000	1.00000	0.99999	0.99992	0.99962	0.99871	0.99643	0.99148	0.98188	0.96484
	7	1.00000	1.00000	1.00000	1.00000	1.00000	0.99998	0.99993	0.99977	0.99934	0.99832	0.99609
	8	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000



TABLE 1B: Cumulative Binomial Distribution

		p										
n	x	.01	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50
9	0	0.91352	0.63025	0.38742	0.23162	0.13422	0.07508	0.04035	0.02071	0.01008	0.00461	0.00195
	1	0.99656	0.92879	0.77484	0.59948	0.43621	0.30034	0.19600	0.12109	0.07054	0.03852	0.01953
	2	0.99992	0.99164	0.94703	0.85915	0.73820	0.60068	0.46283	0.33727	0.23179	0.14950	0.08984
	3	1.00000	0.99936	0.99167	0.96607	0.91436	0.83427	0.72966	0.60889	0.48261	0.36138	0.25391
	4	1.00000	0.99997	0.99911	0.99437	0.98042	0.95107	0.90119	0.82828	0.73343	0.62142	0.50000
	5	1.00000	1.00000	0.99994	0.99937	0.99693	0.99001	0.97471	0.94641	0.90065	0.83418	0.74609
	6	1.00000	1.00000	1.00000	0.99995	0.99969	0.99866	0.99571	0.98882	0.97497	0.95023	0.91016
	7	1.00000	1.00000	1.00000	1.00000	0.99998	0.99989	0.99957	0.99860	0.99620	0.99092	0.98047
	8	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99998	0.99992	0.99974	0.99924	0.99805
	9	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
10	0	0.90438	0.59874	0.34868	0.19687	0.10737	0.05631	0.02825	0.01346	0.00605	0.00253	0.00098
	1	0.99573	0.91386	0.73610	0.54430	0.37581	0.24403	0.14931	0.08595	0.04636	0.02326	0.01074
	2	0.99989	0.98850	0.92981	0.82020	0.67780	0.52559	0.38278	0.26161	0.16729	0.09956	0.05469
	3	1.00000	0.99897	0.98720	0.95003	0.87913	0.77588	0.64961	0.51383	0.38228	0.26604	0.17188
	4	1.00000	0.99994	0.99837	0.99013	0.96721	0.92187	0.84973	0.75150	0.63310	0.50440	0.37695
	5	1.00000	1.00000	0.99985	0.99862	0.99363	0.98027	0.95265	0.90507	0.83376	0.73844	0.62305
	6	1.00000	1.00000	0.99999	0.99987	0.99914	0.99649	0.98941	0.97398	0.94524	0.89801	0.82812
	7	1.00000	1.00000	1.00000	0.99999	0.99992	0.99958	0.99841	0.99518	0.98771	0.97261	0.94531
	8	1.00000	1.00000	1.00000	1.00000	1.00000	0.99997	0.99986	0.99946	0.99832	0.99550	0.98926
	9	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99997	0.99990	0.99966	0.99902
	10	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
11	0	0.89534	0.56880	0.31381	0.16734	0.08590	0.04224	0.01977	0.00875	0.00363	0.00139	0.00049
	1	0.99482	0.89811	0.69736	0.49219	0.32212	0.19710	0.11299	0.06058	0.03023	0.01393	0.00586
	2	0.99984	0.98476	0.91044	0.77881	0.61740	0.45520	0.31274	0.20013	0.11892	0.06522	0.03271
	3	1.00000	0.99845	0.98147	0.93056	0.83886	0.71330	0.56956	0.42555	0.29628	0.19112	0.11328
	4	1.00000	0.99989	0.99725	0.98411	0.94959	0.88537	0.78970	0.66831	0.53277	0.39714	0.27441
	5	1.00000	0.99999	0.99970	0.99734	0.98835	0.96567	0.92178	0.85132	0.75350	0.63312	0.50000
	6	1.00000	1.00000	0.99998	0.99968	0.99803	0.99244	0.97838	0.94986	0.90065	0.82620	0.72559
	7	1.00000	1.00000	1.00000	0.99997	0.99976	0.99881	0.99571	0.98776	0.97072	0.93904	0.88672
	8	1.00000	1.00000	1.00000	1.00000	0.99998	0.99987	0.99942	0.99796	0.99408	0.98520	0.96729
	9	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99995	0.99979	0.99927	0.99779	0.99414
	10	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99996	0.99985	0.99951
	11	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
12	0	0.88638	0.54036	0.28243	0.14224	0.06872	0.03168	0.01384	0.00569	0.00218	0.00077	0.00024
	1	0.99383	0.88164	0.65900	0.44346	0.27488	0.15838	0.08503	0.04244	0.01959	0.00829	0.00317
	2	0.99979	0.98043	0.88913	0.73582	0.55835	0.39068	0.25282	0.15129	0.08344	0.04214	0.01929
	3	1.00000	0.99776	0.97436	0.90779	0.79457	0.64878	0.49252	0.34665	0.22534	0.13447	0.07300
	4	1.00000	0.99982	0.99567	0.97608	0.92744	0.84236	0.72366	0.58335	0.43818	0.30443	0.19385
	5	1.00000	0.99999	0.99946	0.99536	0.98059	0.94560	0.88215	0.78726	0.66521	0.52693	0.38721
	6	1.00000	1.00000	0.99995	0.99933	0.99610	0.98575	0.96140	0.91537	0.84179	0.73931	0.61279
	7	1.00000	1.00000	1.00000	0.99993	0.99942	0.99722	0.99051	0.97449	0.94269	0.88826	0.80615
	8	1.00000	1.00000	1.00000	0.99999	0.99994	0.99961	0.99831	0.99439	0.98473	0.96443	0.92700



TABLE 1C: Cumulative Binomial Distribution

n	x	p										
		.01	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50
12	9	1.00000	1.00000	1.00000	1.00000	1.00000	0.99996	0.99979	0.99915	0.99719	0.99212	0.98071
	10	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99998	0.99992	0.99968	0.99892	0.99683
	11	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99998	0.99993	0.99976
	12	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
13	0	0.87752	0.51334	0.25419	0.12091	0.05498	0.02376	0.00969	0.00370	0.00131	0.00042	0.00012
	1	0.99275	0.86458	0.62134	0.39828	0.23365	0.12671	0.06367	0.02958	0.01263	0.00490	0.00171
	2	0.99973	0.97549	0.86612	0.69196	0.50165	0.33260	0.20248	0.11319	0.05790	0.02691	0.01123
	3	0.99999	0.99690	0.96584	0.88200	0.74732	0.58425	0.42061	0.27827	0.16858	0.09292	0.04614
	4	1.00000	0.99971	0.99354	0.96584	0.90087	0.79396	0.65431	0.50050	0.35304	0.22795	0.13342
	5	1.00000	0.99998	0.99908	0.99247	0.96996	0.91979	0.83460	0.71589	0.57440	0.42681	0.29053
	6	1.00000	1.00000	0.99990	0.99873	0.99300	0.97571	0.93762	0.87053	0.77116	0.64374	0.50000
	7	1.00000	1.00000	0.99999	0.99984	0.99875	0.99435	0.98178	0.95380	0.90233	0.82123	0.70947
	8	1.00000	1.00000	1.00000	0.99998	0.99983	0.99901	0.99597	0.98743	0.96792	0.93015	0.86658
	9	1.00000	1.00000	1.00000	1.00000	0.99998	0.99987	0.99935	0.99749	0.99221	0.97966	0.95386
	10	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99993	0.99965	0.99868	0.99586	0.98877
	11	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99997	0.99986	0.99948	0.99829
	12	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99997	0.99988
	13	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
14	0	0.86875	0.48767	0.22877	0.10277	0.04398	0.01782	0.00678	0.00240	0.00078	0.00023	0.00006
	1	0.99160	0.84701	0.58463	0.35667	0.19791	0.10097	0.04748	0.02052	0.00810	0.00289	0.00092
	2	0.99966	0.96995	0.84164	0.64791	0.44805	0.28113	0.16084	0.08393	0.03979	0.01701	0.00647
	3	0.99999	0.99583	0.95587	0.85349	0.69819	0.52134	0.35517	0.22050	0.12431	0.06322	0.02869
	4	1.00000	0.99957	0.99077	0.95326	0.87016	0.74153	0.58420	0.42272	0.27926	0.16719	0.08978
	5	1.00000	0.99997	0.99853	0.98847	0.95615	0.88833	0.78052	0.64051	0.48585	0.33732	0.21198
	6	1.00000	1.00000	0.99982	0.99779	0.98839	0.96173	0.90672	0.81641	0.69245	0.54612	0.39526
	7	1.00000	1.00000	0.99998	0.99967	0.99760	0.98969	0.96853	0.92466	0.84986	0.74136	0.60474
	8	1.00000	1.00000	1.00000	0.99996	0.99962	0.99785	0.99171	0.97566	0.94168	0.88114	0.78802
	9	1.00000	1.00000	1.00000	1.00000	0.99995	0.99966	0.99833	0.99396	0.98249	0.95738	0.91022
	10	1.00000	1.00000	1.00000	1.00000	1.00000	0.99996	0.99975	0.99889	0.99609	0.98857	0.97131
	11	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99997	0.99986	0.99939	0.99785	0.99353
	12	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99994	0.99975	0.99908
	13	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99994
	14	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000



TABLE 1D: Cumulative Binomial Distribution

n	x	p									
		.01	.05	.10	.15	.20	.25	.30	.35	.40	.50
15	0	0.86006	0.46329	0.20589	0.08735	0.03518	0.01336	0.00475	0.00156	0.00047	0.00013
	1	0.99037	0.82905	0.54904	0.31859	0.16713	0.08018	0.03527	0.01418	0.00517	0.00169
	2	0.99958	0.96380	0.81594	0.60423	0.39802	0.23609	0.12683	0.06173	0.02711	0.01065
	3	0.99999	0.99453	0.94444	0.82266	0.64816	0.46129	0.29687	0.17270	0.09050	0.04242
	4	1.00000	0.99939	0.98728	0.93829	0.83577	0.68649	0.51549	0.35194	0.21728	0.12040
	5	1.00000	0.99995	0.99775	0.98319	0.93895	0.85163	0.72162	0.56428	0.40322	0.26076
	6	1.00000	1.00000	0.99969	0.99639	0.98194	0.94338	0.86886	0.75484	0.60981	0.45216
	7	1.00000	1.00000	0.99997	0.99939	0.99576	0.98270	0.94999	0.88677	0.78690	0.65350
	8	1.00000	1.00000	1.00000	0.99992	0.99922	0.99581	0.98476	0.95781	0.90495	0.81824
	9	1.00000	1.00000	1.00000	0.99999	0.99989	0.99921	0.99635	0.98756	0.96617	0.92307
	10	1.00000	1.00000	1.00000	1.00000	0.99999	0.99988	0.99933	0.99717	0.99065	0.97453
	11	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99991	0.99952	0.99807	0.99367
	12	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99994	0.99972	0.99889
	13	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99997	0.99988	0.99951
	14	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99997
	15	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
20	0	0.81791	0.35849	0.12158	0.03876	0.01153	0.00317	0.00080	0.00018	0.00004	0.00001
	1	0.98314	0.73584	0.39175	0.17556	0.06918	0.02431	0.00764	0.00213	0.00052	0.00011
	2	0.99900	0.92452	0.67693	0.40490	0.20608	0.09126	0.03548	0.01212	0.00361	0.00093
	3	0.99996	0.98410	0.86705	0.64773	0.41145	0.22516	0.10709	0.04438	0.01596	0.00493
	4	1.00000	0.99743	0.95683	0.82985	0.62965	0.41484	0.23751	0.11820	0.05095	0.01886
	5	1.00000	0.99967	0.98875	0.93269	0.80421	0.61717	0.41637	0.24540	0.12560	0.05533
	6	1.00000	0.99997	0.99761	0.97806	0.91331	0.78578	0.60801	0.41663	0.25001	0.12993
	7	1.00000	1.00000	0.99958	0.99408	0.96786	0.89819	0.77227	0.60103	0.41589	0.25201
	8	1.00000	1.00000	0.99994	0.99867	0.99002	0.95907	0.88667	0.76238	0.59560	0.41431
	9	1.00000	1.00000	0.99999	0.99975	0.99741	0.98614	0.95204	0.87822	0.75534	0.59136
	10	1.00000	1.00000	1.00000	0.99996	0.99944	0.99606	0.98286	0.94683	0.87248	0.75071
	11	1.00000	1.00000	1.00000	0.99999	0.99990	0.99906	0.99486	0.98042	0.94347	0.86923
	12	1.00000	1.00000	1.00000	1.00000	0.99998	0.99982	0.99872	0.99398	0.97897	0.94197
	13	1.00000	1.00000	1.00000	1.00000	1.00000	0.99997	0.99974	0.99848	0.99353	0.97859
	14	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99996	0.99969	0.99839	0.99357
	15	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99995	0.99968	0.99847
	16	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99995	0.99972
	17	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999	0.99996
	18	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99998
	19	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
	20	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000



Table 2: Cumulative Poisson Probability Distribution Table

x	λ									
	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	0.9950	0.9900	0.9802	0.9704	0.9608	0.9512	0.9418	0.9324	0.9231	0.9139
1	1.0000	1.0000	0.9998	0.9996	0.9992	0.9988	0.9983	0.9977	0.9970	0.9962
2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999
3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ									
	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
0	0.9048	0.8187	0.7408	0.6703	0.6065	0.5488	0.4966	0.4493	0.4066	0.3679
1	0.9953	0.9825	0.9631	0.9384	0.9098	0.8781	0.8442	0.8088	0.7725	0.7358
2	0.9998	0.9989	0.9964	0.9921	0.9856	0.9769	0.9659	0.9526	0.9371	0.9197
3	1.0000	0.9999	0.9997	0.9992	0.9982	0.9966	0.9942	0.9909	0.9865	0.9810
4	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9992	0.9986	0.9977	0.9963
5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9994
6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ									
	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00
0	0.3329	0.3012	0.2725	0.2466	0.2231	0.2019	0.1827	0.1653	0.1496	0.1353
1	0.6990	0.6626	0.6268	0.5918	0.5578	0.5249	0.4932	0.4628	0.4337	0.4060
2	0.9004	0.8795	0.8571	0.8335	0.8088	0.7834	0.7572	0.7306	0.7037	0.6767
3	0.9743	0.9662	0.9569	0.9463	0.9344	0.9212	0.9068	0.8913	0.8747	0.8571
4	0.9946	0.9923	0.9893	0.9857	0.9814	0.9763	0.9704	0.9636	0.9559	0.9473
5	0.9990	0.9985	0.9978	0.9968	0.9955	0.9940	0.9920	0.9896	0.9868	0.9834
6	0.9999	0.9997	0.9996	0.9994	0.9991	0.9987	0.9981	0.9974	0.9966	0.9955
7	1.0000	1.0000	0.9999	0.9999	0.9998	0.9997	0.9996	0.9994	0.9992	0.9989
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9998
9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ									
	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00
0	0.1225	0.1108	0.1003	0.0907	0.0821	0.0743	0.0672	0.0608	0.0550	0.0498
1	0.3796	0.3546	0.3309	0.3084	0.2873	0.2674	0.2487	0.2311	0.2146	0.1991
2	0.6496	0.6227	0.5960	0.5697	0.5438	0.5184	0.4936	0.4695	0.4460	0.4232
3	0.8386	0.8194	0.7993	0.7787	0.7576	0.7360	0.7141	0.6919	0.6696	0.6472
4	0.9379	0.9275	0.9162	0.9041	0.8912	0.8774	0.8629	0.8477	0.8318	0.8153
5	0.9796	0.9751	0.9700	0.9643	0.9580	0.9510	0.9433	0.9349	0.9258	0.9161
6	0.9941	0.9925	0.9906	0.9884	0.9858	0.9828	0.9794	0.9756	0.9713	0.9665
7	0.9985	0.9980	0.9974	0.9967	0.9958	0.9947	0.9934	0.9919	0.9901	0.9881
8	0.9997	0.9995	0.9994	0.9991	0.9989	0.9985	0.9981	0.9976	0.9969	0.9962
9	0.9999	0.9999	0.9999	0.9998	0.9997	0.9996	0.9995	0.9993	0.9991	0.9989
10	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9998	0.9998	0.9997
11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



		λ									
x		3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00
0		0.0450	0.0408	0.0369	0.0334	0.0302	0.0273	0.0247	0.0224	0.0202	0.0183
1		0.1847	0.1712	0.1586	0.1468	0.1359	0.1257	0.1162	0.1074	0.0992	0.0916
2		0.4012	0.3799	0.3594	0.3397	0.3208	0.3027	0.2854	0.2689	0.2531	0.2381
3		0.6248	0.6025	0.5803	0.5584	0.5366	0.5152	0.4942	0.4735	0.4532	0.4335
4		0.7982	0.7806	0.7626	0.7442	0.7254	0.7064	0.6872	0.6678	0.6484	0.6288
5		0.9057	0.8946	0.8829	0.8705	0.8576	0.8441	0.8301	0.8156	0.8006	0.7851
6		0.9612	0.9554	0.9490	0.9421	0.9347	0.9267	0.9182	0.9091	0.8995	0.8893
7		0.9858	0.9832	0.9802	0.9769	0.9733	0.9692	0.9648	0.9599	0.9546	0.9489
8		0.9953	0.9943	0.9931	0.9917	0.9901	0.9883	0.9863	0.9840	0.9815	0.9786
9		0.9986	0.9982	0.9978	0.9973	0.9967	0.9960	0.9952	0.9942	0.9931	0.9919
10		0.9996	0.9995	0.9994	0.9992	0.9990	0.9987	0.9984	0.9981	0.9977	0.9972
11		0.9999	0.9999	0.9998	0.9998	0.9997	0.9996	0.9995	0.9994	0.9993	0.9991
12		1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998	0.9997
13		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
14		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

		λ									
x		4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	5.00
0		0.0166	0.0150	0.0136	0.0123	0.0111	0.0101	0.0091	0.0082	0.0074	0.0067
1		0.0845	0.0780	0.0719	0.0663	0.0611	0.0563	0.0518	0.0477	0.0439	0.0404
2		0.2238	0.2102	0.1974	0.1851	0.1736	0.1626	0.1523	0.1425	0.1333	0.1247
3		0.4142	0.3954	0.3772	0.3594	0.3423	0.3257	0.3097	0.2942	0.2793	0.2650
4		0.6093	0.5898	0.5704	0.5512	0.5321	0.5132	0.4946	0.4763	0.4582	0.4405
5		0.7693	0.7531	0.7367	0.7199	0.7029	0.6858	0.6684	0.6510	0.6335	0.6160
6		0.8786	0.8675	0.8558	0.8436	0.8311	0.8180	0.8046	0.7908	0.7767	0.7622
7		0.9427	0.9361	0.9290	0.9214	0.9134	0.9049	0.8960	0.8867	0.8769	0.8666
8		0.9755	0.9721	0.9683	0.9642	0.9597	0.9549	0.9497	0.9442	0.9382	0.9319
9		0.9905	0.9889	0.9871	0.9851	0.9829	0.9805	0.9778	0.9749	0.9717	0.9682
10		0.9966	0.9959	0.9952	0.9943	0.9933	0.9922	0.9910	0.9896	0.9880	0.9863
11		0.9989	0.9986	0.9983	0.9980	0.9976	0.9971	0.9966	0.9960	0.9953	0.9945
12		0.9997	0.9996	0.9995	0.9993	0.9992	0.9990	0.9988	0.9986	0.9983	0.9980
13		0.9999	0.9999	0.9998	0.9998	0.9997	0.9997	0.9996	0.9995	0.9994	0.9993
14		1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998
15		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
16		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



x	λ									
	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	6.00
0	0.0061	0.0055	0.0050	0.0045	0.0041	0.0037	0.0033	0.0030	0.0027	0.0025
1	0.0372	0.0342	0.0314	0.0289	0.0266	0.0244	0.0224	0.0206	0.0189	0.0174
2	0.1165	0.1088	0.1016	0.0948	0.0884	0.0824	0.0768	0.0715	0.0666	0.0620
3	0.2513	0.2381	0.2254	0.2133	0.2017	0.1906	0.1800	0.1700	0.1604	0.1512
4	0.4231	0.4061	0.3895	0.3733	0.3575	0.3422	0.3272	0.3127	0.2987	0.2851
5	0.5984	0.5809	0.5635	0.5461	0.5289	0.5119	0.4950	0.4783	0.4619	0.4457
6	0.7474	0.7324	0.7171	0.7017	0.6860	0.6703	0.6544	0.6384	0.6224	0.6063
7	0.8560	0.8449	0.8335	0.8217	0.8095	0.7970	0.7841	0.7710	0.7576	0.7440
8	0.9252	0.9181	0.9106	0.9027	0.8944	0.8857	0.8766	0.8672	0.8574	0.8472
9	0.9644	0.9603	0.9559	0.9512	0.9462	0.9409	0.9352	0.9292	0.9228	0.9161
10	0.9844	0.9823	0.9800	0.9775	0.9747	0.9718	0.9686	0.9651	0.9614	0.9574
11	0.9937	0.9927	0.9916	0.9904	0.9890	0.9875	0.9859	0.9841	0.9821	0.9799
12	0.9976	0.9972	0.9967	0.9962	0.9955	0.9949	0.9941	0.9932	0.9922	0.9912
13	0.9992	0.9990	0.9988	0.9986	0.9983	0.9980	0.9977	0.9973	0.9969	0.9964
14	0.9997	0.9997	0.9996	0.9995	0.9994	0.9993	0.9991	0.9990	0.9988	0.9986
15	0.9999	0.9999	0.9999	0.9998	0.9998	0.9998	0.9997	0.9996	0.9996	0.9995
16	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9998
17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ									
	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	7.00
0	0.0022	0.0020	0.0018	0.0017	0.0015	0.0014	0.0012	0.0011	0.0010	0.0009
1	0.0159	0.0146	0.0134	0.0123	0.0113	0.0103	0.0095	0.0087	0.0080	0.0073
2	0.0577	0.0536	0.0498	0.0463	0.0430	0.0400	0.0371	0.0344	0.0320	0.0296
3	0.1425	0.1342	0.1264	0.1189	0.1118	0.1052	0.0988	0.0928	0.0871	0.0818
4	0.2719	0.2592	0.2469	0.2351	0.2237	0.2127	0.2022	0.1920	0.1823	0.1730
5	0.4298	0.4141	0.3988	0.3837	0.3690	0.3547	0.3406	0.3270	0.3137	0.3007
6	0.5902	0.5742	0.5582	0.5423	0.5265	0.5108	0.4953	0.4799	0.4647	0.4497
7	0.7301	0.7160	0.7017	0.6873	0.6728	0.6581	0.6433	0.6285	0.6136	0.5987
8	0.8367	0.8259	0.8148	0.8033	0.7916	0.7796	0.7673	0.7548	0.7420	0.7291
9	0.9090	0.9016	0.8939	0.8858	0.8774	0.8686	0.8596	0.8502	0.8405	0.8305
10	0.9531	0.9486	0.9437	0.9386	0.9332	0.9274	0.9214	0.9151	0.9084	0.9015
11	0.9776	0.9750	0.9723	0.9693	0.9661	0.9627	0.9591	0.9552	0.9510	0.9467
12	0.9900	0.9887	0.9873	0.9857	0.9840	0.9821	0.9801	0.9779	0.9755	0.9730
13	0.9958	0.9952	0.9945	0.9937	0.9929	0.9920	0.9909	0.9898	0.9885	0.9872
14	0.9984	0.9981	0.9978	0.9974	0.9970	0.9966	0.9961	0.9956	0.9950	0.9943
15	0.9994	0.9993	0.9992	0.9990	0.9988	0.9986	0.9984	0.9982	0.9979	0.9976
16	0.9998	0.9997	0.9997	0.9996	0.9996	0.9995	0.9994	0.9993	0.9992	0.9990
17	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998	0.9998	0.9997	0.9997	0.9996
18	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



		λ									
x		7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	8.00
0		0.0008	0.0007	0.0007	0.0006	0.0006	0.0005	0.0005	0.0004	0.0004	0.0003
1		0.0067	0.0061	0.0056	0.0051	0.0047	0.0043	0.0039	0.0036	0.0033	0.0030
2		0.0275	0.0255	0.0236	0.0219	0.0203	0.0188	0.0174	0.0161	0.0149	0.0138
3		0.0767	0.0719	0.0674	0.0632	0.0591	0.0554	0.0518	0.0485	0.0453	0.0424
4		0.1641	0.1555	0.1473	0.1395	0.1321	0.1249	0.1181	0.1117	0.1055	0.0996
5		0.2881	0.2759	0.2640	0.2526	0.2414	0.2307	0.2203	0.2103	0.2006	0.1912
6		0.4349	0.4204	0.4060	0.3920	0.3782	0.3646	0.3514	0.3384	0.3257	0.3134
7		0.5838	0.5689	0.5541	0.5393	0.5246	0.5100	0.4956	0.4812	0.4670	0.4530
8		0.7160	0.7027	0.6892	0.6757	0.6620	0.6482	0.6343	0.6204	0.6065	0.5925
9		0.8202	0.8096	0.7988	0.7877	0.7764	0.7649	0.7531	0.7411	0.7290	0.7166
10		0.8942	0.8867	0.8788	0.8707	0.8622	0.8535	0.8445	0.8352	0.8257	0.8159
11		0.9420	0.9371	0.9319	0.9265	0.9208	0.9148	0.9085	0.9020	0.8952	0.8881
12		0.9703	0.9673	0.9642	0.9609	0.9573	0.9536	0.9496	0.9454	0.9409	0.9362
13		0.9857	0.9841	0.9824	0.9805	0.9784	0.9762	0.9739	0.9714	0.9687	0.9658
14		0.9935	0.9927	0.9918	0.9908	0.9897	0.9886	0.9873	0.9859	0.9844	0.9827
15		0.9972	0.9969	0.9964	0.9959	0.9954	0.9948	0.9941	0.9934	0.9926	0.9918
16		0.9989	0.9987	0.9985	0.9983	0.9980	0.9978	0.9974	0.9971	0.9967	0.9963
17		0.9996	0.9995	0.9994	0.9993	0.9992	0.9991	0.9989	0.9988	0.9986	0.9984
18		0.9998	0.9998	0.9998	0.9997	0.9997	0.9996	0.9996	0.9995	0.9994	0.9993
19		0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998	0.9998	0.9997
20		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999
21		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

		λ									
x		8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	9.00
0		0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001
1		0.0028	0.0025	0.0023	0.0021	0.0019	0.0018	0.0016	0.0015	0.0014	0.0012
2		0.0127	0.0118	0.0109	0.0100	0.0093	0.0086	0.0079	0.0073	0.0068	0.0062
3		0.0396	0.0370	0.0346	0.0323	0.0301	0.0281	0.0262	0.0244	0.0228	0.0212
4		0.0940	0.0887	0.0837	0.0789	0.0744	0.0701	0.0660	0.0621	0.0584	0.0550
5		0.1822	0.1736	0.1653	0.1573	0.1496	0.1422	0.1352	0.1284	0.1219	0.1157
6		0.3013	0.2896	0.2781	0.2670	0.2562	0.2457	0.2355	0.2256	0.2160	0.2068
7		0.4391	0.4254	0.4119	0.3987	0.3856	0.3728	0.3602	0.3478	0.3357	0.3239
8		0.5786	0.5647	0.5507	0.5369	0.5231	0.5094	0.4958	0.4823	0.4689	0.4557
9		0.7041	0.6915	0.6788	0.6659	0.6530	0.6400	0.6269	0.6137	0.6006	0.5874
10		0.8058	0.7955	0.7850	0.7743	0.7634	0.7522	0.7409	0.7294	0.7178	0.7060
11		0.8807	0.8731	0.8652	0.8571	0.8487	0.8400	0.8311	0.8220	0.8126	0.8030
12		0.9313	0.9261	0.9207	0.9150	0.9091	0.9029	0.8965	0.8898	0.8829	0.8758
13		0.9628	0.9595	0.9561	0.9524	0.9486	0.9445	0.9403	0.9358	0.9311	0.9261
14		0.9810	0.9791	0.9771	0.9749	0.9726	0.9701	0.9675	0.9647	0.9617	0.9585
15		0.9908	0.9898	0.9887	0.9875	0.9862	0.9848	0.9832	0.9816	0.9798	0.9780
16		0.9958	0.9953	0.9947	0.9941	0.9934	0.9926	0.9918	0.9909	0.9899	0.9889
17		0.9982	0.9979	0.9977	0.9973	0.9970	0.9966	0.9962	0.9957	0.9952	0.9947
18		0.9992	0.9991	0.9990	0.9989	0.9987	0.9985	0.9983	0.9981	0.9978	0.9976
19		0.9997	0.9997	0.9996	0.9995	0.9995	0.9994	0.9993	0.9992	0.9991	0.9989
20		0.9999	0.9999	0.9998	0.9998	0.9998	0.9998	0.9997	0.9997	0.9996	0.9996



21	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998
22	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
23	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

λ

x	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00
0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000
1	0.0011	0.0010	0.0009	0.0009	0.0008	0.0007	0.0007	0.0006	0.0005	0.0005
2	0.0058	0.0053	0.0049	0.0045	0.0042	0.0038	0.0035	0.0033	0.0030	0.0028
3	0.0198	0.0184	0.0172	0.0160	0.0149	0.0138	0.0129	0.0120	0.0111	0.0103
4	0.0517	0.0486	0.0456	0.0429	0.0403	0.0378	0.0355	0.0333	0.0312	0.0293
5	0.1098	0.1041	0.0986	0.0935	0.0885	0.0838	0.0793	0.0750	0.0710	0.0671
6	0.1978	0.1892	0.1808	0.1727	0.1649	0.1574	0.1502	0.1433	0.1366	0.1301
7	0.3123	0.3010	0.2900	0.2792	0.2687	0.2584	0.2485	0.2388	0.2294	0.2202
8	0.4426	0.4296	0.4168	0.4042	0.3918	0.3796	0.3676	0.3558	0.3442	0.3328
9	0.5742	0.5611	0.5479	0.5349	0.5218	0.5089	0.4960	0.4832	0.4705	0.4579
10	0.6941	0.6820	0.6699	0.6576	0.6453	0.6329	0.6205	0.6080	0.5955	0.5830
11	0.7932	0.7832	0.7730	0.7626	0.7520	0.7412	0.7303	0.7193	0.7081	0.6968
12	0.8684	0.8607	0.8529	0.8448	0.8364	0.8279	0.8191	0.8101	0.8009	0.7916
13	0.9210	0.9156	0.9100	0.9042	0.8981	0.8919	0.8853	0.8786	0.8716	0.8645
14	0.9552	0.9517	0.9480	0.9441	0.9400	0.9357	0.9312	0.9265	0.9216	0.9165
15	0.9760	0.9738	0.9715	0.9691	0.9665	0.9638	0.9609	0.9579	0.9546	0.9513
16	0.9878	0.9865	0.9852	0.9838	0.9823	0.9806	0.9789	0.9770	0.9751	0.9730
17	0.9941	0.9934	0.9927	0.9919	0.9911	0.9902	0.9892	0.9881	0.9870	0.9857
18	0.9973	0.9969	0.9966	0.9962	0.9957	0.9952	0.9947	0.9941	0.9935	0.9928
19	0.9988	0.9986	0.9985	0.9983	0.9980	0.9978	0.9975	0.9972	0.9969	0.9965
20	0.9995	0.9994	0.9993	0.9992	0.9991	0.9990	0.9989	0.9987	0.9986	0.9984
21	0.9998	0.9998	0.9997	0.9997	0.9996	0.9996	0.9995	0.9995	0.9994	0.9993
22	0.9999	0.9999	0.9999	0.9999	0.9999	0.9998	0.9998	0.9998	0.9997	0.9997
23	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
24	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



Table 3A: Standard Normal Distribution

Cumulative from mean (0 to Z)

This table gives a probability that a statistic is between 0 (the mean) and Z.

Z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.00000	0.00399	0.00798	0.01197	0.01595	0.01994	0.02392	0.0279	0.03188	0.03586
0.1	0.03983	0.0438	0.04776	0.05172	0.05567	0.05962	0.06356	0.06749	0.07142	0.07535
0.2	0.07926	0.08317	0.08706	0.09095	0.09483	0.09871	0.10257	0.10642	0.11026	0.11409
0.3	0.11791	0.12172	0.12552	0.1293	0.13307	0.13683	0.14058	0.14431	0.14803	0.15173
0.4	0.15542	0.1591	0.16276	0.1664	0.17003	0.17364	0.17724	0.18082	0.18439	0.18793
0.5	0.19146	0.19497	0.19847	0.20194	0.2054	0.20884	0.21226	0.21566	0.21904	0.2224
0.6	0.22575	0.22907	0.23237	0.23565	0.23891	0.24215	0.24537	0.24857	0.25175	0.2549
0.7	0.25804	0.26115	0.26424	0.2673	0.27035	0.27337	0.27637	0.27935	0.2823	0.28524
0.8	0.28814	0.29103	0.29389	0.29673	0.29955	0.30234	0.30511	0.30785	0.31057	0.31327
0.9	0.31594	0.31859	0.32121	0.32381	0.32639	0.32894	0.33147	0.33398	0.33646	0.33891
1.0	0.34134	0.34375	0.34614	0.34849	0.35083	0.35314	0.35543	0.35769	0.35993	0.36214
1.1	0.36433	0.3665	0.36864	0.37076	0.37286	0.37493	0.37698	0.379	0.381	0.38298
1.2	0.38493	0.38686	0.38877	0.39065	0.39251	0.39435	0.39617	0.39796	0.39973	0.40147
1.3	0.4032	0.4049	0.40658	0.40824	0.40988	0.41149	0.41308	0.41466	0.41621	0.41774
1.4	0.41924	0.42073	0.4222	0.42364	0.42507	0.42647	0.42785	0.42922	0.43056	0.43189
1.5	0.43319	0.43448	0.43574	0.43699	0.43822	0.43943	0.44062	0.44179	0.44295	0.44408
1.6	0.4452	0.4463	0.44738	0.44845	0.4495	0.45053	0.45154	0.45254	0.45352	0.45449
1.7	0.45543	0.45637	0.45728	0.45818	0.45907	0.45994	0.4608	0.46164	0.46246	0.46327
1.8	0.46407	0.46485	0.46562	0.46638	0.46712	0.46784	0.46856	0.46926	0.46995	0.47062
1.9	0.47128	0.47193	0.47257	0.4732	0.47381	0.47441	0.475	0.47558	0.47615	0.4767
2.0	0.47725	0.47778	0.47831	0.47882	0.47932	0.47982	0.4803	0.48077	0.48124	0.48169
2.1	0.48214	0.48257	0.483	0.48341	0.48382	0.48422	0.48461	0.485	0.48537	0.48574
2.2	0.4861	0.48645	0.48679	0.48713	0.48745	0.48778	0.48809	0.4884	0.4887	0.48899
2.3	0.48928	0.48956	0.48983	0.4901	0.49036	0.49061	0.49086	0.49111	0.49134	0.49158
2.4	0.4918	0.49202	0.49224	0.49245	0.49266	0.49286	0.49305	0.49324	0.49343	0.49361
2.5	0.49379	0.49396	0.49413	0.4943	0.49446	0.49461	0.49477	0.49492	0.49506	0.4952
2.6	0.49534	0.49547	0.4956	0.49573	0.49585	0.49598	0.49609	0.49621	0.49632	0.49643
2.7	0.49653	0.49664	0.49674	0.49683	0.49693	0.49702	0.49711	0.4972	0.49728	0.49736
2.8	0.49744	0.49752	0.4976	0.49767	0.49774	0.49781	0.49788	0.49795	0.49801	0.49807
2.9	0.49813	0.49819	0.49825	0.49831	0.49836	0.49841	0.49846	0.49851	0.49856	0.49861
3.0	0.49865	0.49869	0.49874	0.49878	0.49882	0.49886	0.49889	0.49893	0.49896	0.499
3.1	0.49903	0.49906	0.4991	0.49913	0.49916	0.49918	0.49921	0.49924	0.49926	0.49929
3.2	0.49931	0.49934	0.49936	0.49938	0.4994	0.49942	0.49944	0.49946	0.49948	0.4995
3.3	0.49952	0.49953	0.49955	0.49957	0.49958	0.4996	0.49961	0.49962	0.49964	0.49965
3.4	0.49966	0.49968	0.49969	0.4997	0.49971	0.49972	0.49973	0.49974	0.49975	0.49976
3.5	0.49977	0.49978	0.49978	0.49979	0.4998	0.49981	0.49981	0.49982	0.49983	0.49983
3.6	0.49984	0.49985	0.49985	0.49986	0.49986	0.49987	0.49987	0.49988	0.49988	0.49989
3.7	0.49989	0.4999	0.4999	0.4999	0.49991	0.49991	0.49992	0.49992	0.49992	0.49992
3.8	0.49993	0.49993	0.49993	0.49994	0.49994	0.49994	0.49994	0.49995	0.49995	0.49995



Table 3B: Cumulative Standardized Normal Distribution

Cumulative from negative infinity to negative Z

-Z	0.0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-0.0	0.50000	0.49601	0.49202	0.48803	0.48405	0.48006	0.47608	0.4721	0.46812	0.46414
-0.1	0.46017	0.45621	0.45224	0.44828	0.44433	0.44038	0.43644	0.43251	0.42858	0.42466
-0.2	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
-0.3	0.38209	0.37828	0.37448	0.3707	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
-0.4	0.34458	0.3409	0.33724	0.3336	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
-0.5	0.30854	0.30503	0.30153	0.29806	0.2946	0.29116	0.28774	0.28434	0.28096	0.2776
-0.6	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.2451
-0.7	0.24196	0.23885	0.23576	0.2327	0.22965	0.22663	0.22363	0.22065	0.2177	0.21476
-0.8	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
-0.9	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
-1.0	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
-1.1	0.13567	0.1335	0.13136	0.12924	0.12714	0.12507	0.12302	0.121	0.119	0.11702
-1.2	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10384	0.10204	0.10027	0.09853
-1.3	0.0968	0.0951	0.09342	0.09176	0.09012	0.08851	0.08692	0.08534	0.08379	0.08226
-1.4	0.08076	0.07927	0.0778	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
-1.5	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592
-1.6	0.0548	0.0537	0.05262	0.05155	0.0505	0.04947	0.04846	0.04746	0.04648	0.04551
-1.7	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.0392	0.03836	0.03754	0.03673
-1.8	0.03593	0.03515	0.03438	0.03363	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
-1.9	0.02872	0.02807	0.02743	0.0268	0.02619	0.02559	0.025	0.02442	0.02385	0.0233
-2.0	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.0197	0.01923	0.01876	0.01831
-2.1	0.01786	0.01743	0.017	0.01659	0.01618	0.01578	0.01539	0.015	0.01463	0.01426
-2.2	0.0139	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.0116	0.0113	0.01101
-2.3	0.01072	0.01044	0.01017	0.0099	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
-2.4	0.0082	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
-2.5	0.00621	0.00604	0.00587	0.0057	0.00554	0.00539	0.00523	0.00509	0.00494	0.0048
-2.6	0.00466	0.00453	0.0044	0.00427	0.00415	0.00403	0.00391	0.00379	0.00368	0.00357
-2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.0028	0.00272	0.00264
-2.8	0.00256	0.00248	0.0024	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
-2.9	0.00187	0.00181	0.00175	0.0017	0.00164	0.00159	0.00154	0.00149	0.00144	0.0014
-3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.001
-3.1	0.00097	0.00094	0.0009	0.00087	0.00085	0.00082	0.00079	0.00076	0.00074	0.00071
-3.2	0.00069	0.00066	0.00064	0.00062	0.0006	0.00058	0.00056	0.00054	0.00052	0.0005
-3.3	0.00048	0.00047	0.00045	0.00043	0.00042	0.0004	0.00039	0.00038	0.00036	0.00035
-3.4	0.00034	0.00033	0.00031	0.0003	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
-3.5	0.00023	0.00022	0.00022	0.00021	0.0002	0.00019	0.00019	0.00018	0.00017	0.00017
-3.6	0.00016	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00012	0.00011
-3.7	0.00011	0.0001	0.0001	0.0001	0.00009	0.00008	0.00008	0.00008	0.00008	0.00008
-3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005



Table 3C: Cumulative Standard Normal Distribution

Cumulative from negative infinity to Z

This table gives a probability that a statistic is less than Z (i.e. between negative infinity and Z).

Z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.50000	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.5279	0.53188	0.53586
0.1	0.53983	0.5438	0.54776	0.55172	0.55567	0.55966	0.5636	0.56749	0.57142	0.57535
0.2	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409
0.3	0.61791	0.62172	0.62552	0.6293	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173
0.4	0.65542	0.6591	0.66276	0.6664	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793
0.5	0.69146	0.69497	0.69847	0.70194	0.7054	0.70884	0.71226	0.71566	0.71904	0.7224
0.6	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.7549
0.7	0.75804	0.76115	0.76424	0.7673	0.77035	0.77337	0.77637	0.77935	0.7823	0.78524
0.8	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327
0.9	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891
1.0	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214
1.1	0.86433	0.8665	0.86864	0.87076	0.87286	0.87493	0.87698	0.879	0.881	0.88298
1.2	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	0.89617	0.89796	0.89973	0.90147
1.3	0.9032	0.9049	0.90658	0.90824	0.90988	0.91149	0.91308	0.91466	0.91621	0.91774
1.4	0.91924	0.92073	0.9222	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189
1.5	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408
1.6	0.9452	0.9463	0.94738	0.94845	0.9495	0.95053	0.95154	0.95254	0.95352	0.95449
1.7	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.9608	0.96164	0.96246	0.96327
1.8	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062
1.9	0.97128	0.97193	0.97257	0.9732	0.97381	0.97441	0.975	0.97558	0.97615	0.9767
2.0	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.9803	0.98077	0.98124	0.98169
2.1	0.98214	0.98257	0.983	0.98341	0.98382	0.98422	0.98461	0.985	0.98537	0.98574
2.2	0.9861	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.9884	0.9887	0.98899
2.3	0.98928	0.98956	0.98983	0.9901	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158
2.4	0.9918	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361
2.5	0.99379	0.99396	0.99413	0.9943	0.99446	0.99461	0.99477	0.99492	0.99506	0.9952
2.6	0.99534	0.99547	0.9956	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643
2.7	0.99653	0.99664	0.99674	0.99683	0.99693	0.99702	0.99711	0.9972	0.99728	0.99736
2.8	0.99744	0.99752	0.9976	0.99767	0.99774	0.99781	0.99788	0.99795	0.99801	0.99807
2.9	0.99813	0.99819	0.99825	0.99831	0.99836	0.99841	0.99846	0.99851	0.99856	0.99861
3.0	0.99865	0.99869	0.99874	0.99878	0.99882	0.99886	0.99889	0.99893	0.99896	0.999
3.1	0.99903	0.99906	0.9991	0.99913	0.99916	0.99918	0.99921	0.99924	0.99926	0.99929
3.2	0.99931	0.99934	0.99936	0.99938	0.9994	0.99942	0.99944	0.99946	0.99948	0.9995
3.3	0.99952	0.99953	0.99955	0.99957	0.99958	0.9996	0.99961	0.99962	0.99964	0.99965
3.4	0.99966	0.99968	0.99969	0.9997	0.99971	0.99972	0.99973	0.99974	0.99975	0.99976
3.5	0.99977	0.99978	0.99978	0.99979	0.9998	0.99981	0.99981	0.99982	0.99983	0.99983
3.6	0.99984	0.99985	0.99985	0.99986	0.99986	0.99987	0.99987	0.99988	0.99988	0.99989
3.7	0.99989	0.9999	0.9999	0.9999	0.99991	0.99991	0.99992	0.99992	0.99992	0.99992
3.8	0.99993	0.99993	0.99993	0.99994	0.99994	0.99994	0.99994	0.99995	0.99995	0.99995



Table 3D: Cumulative Standardized Normal Distribution

Cumulative from Z to positive infinity

This table gives a probability that a statistic is more than Z (i.e. between Z and positive infinity).

Z	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.50000	0.49801	0.49202	0.48803	0.48405	0.48006	0.47608	0.4721	0.46812	0.46414
0.1	0.46017	0.4562	0.45224	0.44828	0.44433	0.44034	0.4364	0.43251	0.42858	0.42465
0.2	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
0.3	0.38209	0.37828	0.37448	0.3707	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
0.4	0.34458	0.3409	0.33724	0.3336	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
0.5	0.30854	0.30503	0.30153	0.29806	0.2946	0.29116	0.28774	0.28434	0.28096	0.2776
0.6	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.2451
0.7	0.24198	0.23885	0.23576	0.2327	0.22965	0.22663	0.22363	0.22065	0.2177	0.21476
0.8	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
0.9	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
1.0	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
1.1	0.13567	0.1335	0.13136	0.12924	0.12714	0.12507	0.12302	0.121	0.119	0.11702
1.2	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10383	0.10204	0.10027	0.09853
1.3	0.0968	0.0951	0.09342	0.09176	0.09012	0.08851	0.08692	0.08534	0.08379	0.08226
1.4	0.08076	0.07927	0.0778	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
1.5	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592
1.6	0.0548	0.0537	0.05262	0.05155	0.0505	0.04947	0.04846	0.04746	0.04648	0.04551
1.7	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.0392	0.03836	0.03754	0.03673
1.8	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
1.9	0.02872	0.02807	0.02743	0.0268	0.02619	0.02559	0.025	0.02442	0.02385	0.0233
2.0	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.0197	0.01923	0.01876	0.01831
2.1	0.01786	0.01743	0.017	0.01659	0.01618	0.01578	0.01539	0.015	0.01463	0.01426
2.2	0.0139	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.0116	0.0113	0.01101
2.3	0.01072	0.01044	0.01017	0.0099	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
2.4	0.0082	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
2.5	0.00621	0.00604	0.00587	0.0057	0.00554	0.00539	0.00523	0.00508	0.00494	0.0048
2.6	0.00466	0.00453	0.0044	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.0028	0.00272	0.00264
2.8	0.00256	0.00248	0.0024	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.001
3.1	0.00097	0.00094	0.0009	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
3.2	0.00069	0.00066	0.00064	0.00062	0.0006	0.00058	0.00056	0.00054	0.00052	0.0005
3.3	0.00048	0.00047	0.00045	0.00043	0.00042	0.0004	0.00039	0.00038	0.00036	0.00035
3.4	0.00034	0.00032	0.00031	0.0003	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
3.5	0.00023	0.00022	0.00022	0.00021	0.0002	0.00019	0.00019	0.00018	0.00017	0.00017
3.6	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
3.7	0.00011	0.0001	0.0001	0.0001	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005



Table 4: Student's T Critical Values

Degree of Freedom	Level of significance of one tail					
	0.25	0.1	0.05	0.025	0.01	0.005
	Level of significance of two tail					
	0.5	0.2	0.1	0.05	0.02	0.01
1	1.000	3.078	6.314	12.706	31.821	63.657
2	0.816	1.886	2.920	4.303	6.965	9.925
3	0.765	1.638	2.353	3.182	4.541	5.841
4	0.741	1.533	2.132	2.776	3.747	4.604
5	0.727	1.476	2.015	2.571	3.365	4.032
6	0.718	1.440	1.943	2.447	3.143	3.707
7	0.711	1.415	1.895	2.365	2.998	3.499
8	0.706	1.397	1.860	2.306	2.896	3.355
9	0.703	1.383	1.833	2.262	2.821	3.250
10	0.700	1.372	1.812	2.228	2.764	3.169
11	0.697	1.363	1.796	2.201	2.718	3.106
12	0.695	1.356	1.782	2.179	2.681	3.055
13	0.694	1.350	1.771	2.160	2.650	3.012
14	0.692	1.345	1.761	2.145	2.624	2.977
15	0.691	1.341	1.753	2.131	2.602	2.947
16	0.690	1.337	1.746	2.120	2.583	2.921
17	0.689	1.333	1.740	2.110	2.567	2.898
18	0.688	1.330	1.734	2.101	2.552	2.878
19	0.688	1.328	1.729	2.093	2.539	2.861
20	0.687	1.325	1.725	2.086	2.528	2.845
21	0.686	1.323	1.721	2.080	2.518	2.831
22	0.686	1.321	1.717	2.074	2.508	2.819
23	0.685	1.319	1.714	2.069	2.500	2.807
24	0.685	1.318	1.711	2.064	2.492	2.797
25	0.684	1.316	1.708	2.060	2.485	2.787
26	0.684	1.315	1.706	2.056	2.479	2.779
27	0.684	1.314	1.703	2.052	2.473	2.771
28	0.683	1.313	1.701	2.048	2.467	2.763
29	0.683	1.311	1.699	2.045	2.462	2.756
30	0.683	1.310	1.697	2.042	2.457	2.750



Table 5: Critical Values of the Chi-Square distribution

D.F	Level of Significance											
	0.995	0.99	0.975	0.95	0.9	0.75	0.5	0.25	0.1	0.05	0.025	0.01
1	0.000039	0.000157	0.000982	0.0039	0.016	0.102	0.455	1.323	2.706	3.841	5.024	6.635
2	0.01	0.0201	0.0506	0.103	0.211	0.575	1.386	2.773	4.605	5.991	7.378	9.21
3	0.0717	0.115	0.216	0.352	0.584	1.213	2.366	4.108	6.251	7.815	9.348	11.35
4	0.207	0.297	0.484	0.711	1.064	1.923	3.357	5.385	7.779	9.488	11.14	13.28
5	0.412	0.554	0.831	1.145	1.61	2.675	4.351	6.626	9.236	11.07	12.83	15.09
6	0.676	0.872	1.237	1.635	2.204	3.455	5.348	7.841	10.65	12.59	14.45	16.81
7	0.989	1.239	1.69	2.167	2.833	4.255	6.346	9.037	12.02	14.07	16.01	18.48
8	1.344	1.646	2.18	2.733	3.49	5.071	7.344	10.22	13.36	15.51	17.54	20.09
9	1.735	2.088	2.7	3.325	4.168	5.899	8.343	11.39	14.68	16.92	19.02	21.67
10	2.156	2.558	3.247	3.94	4.865	6.737	9.342	12.55	15.99	18.31	20.48	23.21
11	2.603	3.053	3.816	4.575	5.578	7.584	10.34	13.7	17.28	19.68	21.92	24.73
12	3.074	3.571	4.404	5.226	6.304	8.438	11.34	14.85	18.55	21.03	23.34	26.22
13	3.565	4.107	5.009	5.892	7.042	9.299	12.34	15.98	19.81	22.36	24.74	27.69
14	4.075	4.66	5.629	6.571	7.79	10.17	13.34	17.12	21.06	23.69	26.12	29.14
15	4.601	5.229	6.262	7.261	8.547	11.04	14.34	18.25	22.31	25	27.49	30.58
16	5.142	5.812	6.908	7.962	9.312	11.91	15.34	19.37	23.54	26.3	28.85	32
17	5.697	6.408	7.564	8.672	10.09	12.79	16.34	20.49	24.77	27.59	30.19	33.41
18	6.265	7.015	8.231	9.39	10.87	13.68	17.34	21.61	25.99	28.87	31.53	34.81
19	6.844	7.633	8.907	10.117	11.65	14.56	18.34	22.72	27.2	30.14	32.85	36.19
20	7.434	8.26	9.591	10.851	12.44	15.45	19.34	23.83	28.41	31.41	34.17	37.57
21	8.034	8.897	10.283	11.591	13.24	16.34	20.34	24.94	29.62	32.67	35.48	38.93
22	8.643	9.542	10.982	12.338	14.04	17.24	21.34	26.04	30.81	33.92	36.78	40.29
23	9.26	10.196	11.689	13.091	14.85	18.14	22.34	27.14	32.01	35.17	38.08	41.64
24	9.886	10.856	12.401	13.848	15.66	19.04	23.34	28.24	33.2	36.42	39.36	42.98
25	10.52	11.524	13.12	14.611	16.47	19.94	24.34	29.34	34.38	37.65	40.65	44.31
26	11.16	12.198	13.844	15.379	17.29	20.84	25.34	30.44	35.56	38.89	41.92	45.64
27	11.808	12.879	14.573	16.151	18.11	21.75	26.34	31.53	36.74	40.11	43.2	46.96
28	12.461	13.565	15.308	16.928	18.94	22.66	27.34	32.62	37.92	41.34	44.46	48.28
29	13.121	14.256	16.047	17.708	19.77	23.57	28.34	33.71	39.09	42.56	45.72	49.59
30	13.787	14.953	16.791	18.493	20.6	24.48	29.34	34.8	40.26	43.77	46.98	50.89



Table: 6A Critical Values of F-distribution (Level of Significance 1%)

Table shows for a particular combination of numerator and denominator degrees of freedom. The critical values of F corresponding to 1% upper tail area

Denominator d.f	Numerator degree of freedom (d.f)																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	
1	4052.2	4999.3	5403.5	5824.3	5764.0	5859.0	5928.3	5981.0	6022.4	6055.9	6106.7	6157.0	6208.7	6234.3	6260.4	6286.4	6313.0	6339.5	
2	98.5	99.0	99.2	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.5	
3	34.1	30.8	29.5	28.7	28.2	27.9	27.7	27.5	27.3	27.2	27.1	26.9	26.7	26.6	26.5	26.4	26.3	26.2	
4	21.2	18.0	16.7	16.0	15.5	15.2	15.0	14.8	14.7	14.5	14.4	14.2	14.0	13.9	13.8	13.7	13.7	13.6	
5	16.3	13.3	12.1	11.4	11.0	10.7	10.5	10.3	10.2	10.1	9.9	9.7	9.6	9.5	9.4	9.3	9.2	9.1	
6	13.7	10.9	9.8	9.1	8.7	8.5	8.3	8.1	8.0	7.9	7.7	7.6	7.4	7.3	7.2	7.1	7.1	7.0	
7	12.2	9.5	8.5	7.8	7.5	7.2	7.0	6.8	6.7	6.6	6.5	6.3	6.2	6.1	6.0	5.9	5.8	5.7	
8	11.3	8.6	7.6	7.0	6.6	6.4	6.2	6.0	5.9	5.8	5.7	5.5	5.4	5.3	5.2	5.1	5.0	4.9	
9	10.6	8.0	7.0	6.4	6.1	5.8	5.6	5.5	5.4	5.3	5.1	5.0	4.8	4.7	4.6	4.5	4.5	4.4	
10	10.0	7.6	6.6	6.0	5.6	5.4	5.2	5.1	4.9	4.8	4.7	4.6	4.4	4.3	4.2	4.2	4.1	4.0	
11	9.6	7.2	6.2	5.7	5.3	5.1	4.9	4.7	4.6	4.5	4.4	4.3	4.1	4.0	3.9	3.9	3.8	3.7	
12	9.3	6.9	6.0	5.4	5.1	4.8	4.6	4.5	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.6	3.5	3.4	
13	9.1	6.7	5.7	5.2	4.9	4.6	4.4	4.3	4.2	4.1	4.0	3.8	3.7	3.6	3.5	3.4	3.3	3.3	
14	8.9	6.5	5.6	5.0	4.7	4.5	4.3	4.1	4.0	3.9	3.8	3.7	3.5	3.4	3.3	3.3	3.2	3.1	
15	8.7	6.4	5.4	4.9	4.6	4.3	4.1	4.0	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	3.0	
16	8.5	6.2	5.3	4.8	4.4	4.2	4.0	3.9	3.8	3.7	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.8	
17	8.4	6.1	5.2	4.7	4.3	4.1	3.9	3.8	3.7	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	
18	8.3	6.0	5.1	4.6	4.2	4.0	3.8	3.7	3.6	3.5	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.7	
19	8.2	5.9	5.0	4.5	4.2	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.8	2.8	2.7	2.6	
20	8.1	5.8	4.9	4.4	4.1	3.9	3.7	3.6	3.5	3.4	3.2	3.1	2.9	2.9	2.8	2.7	2.6	2.5	
21	8.0	5.8	4.9	4.4	4.0	3.8	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.5	
22	7.9	5.7	4.8	4.3	4.0	3.8	3.6	3.5	3.3	3.3	3.1	3.0	2.8	2.7	2.7	2.6	2.5	2.4	
23	7.9	5.7	4.8	4.3	3.9	3.7	3.5	3.4	3.3	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.4	
24	7.8	5.6	4.7	4.2	3.9	3.7	3.5	3.4	3.3	3.2	3.0	2.9	2.7	2.7	2.6	2.5	2.4	2.3	
25	7.8	5.6	4.7	4.2	3.9	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.7	2.6	2.5	2.5	2.4	2.3	
26	7.7	5.5	4.6	4.1	3.8	3.6	3.4	3.3	3.2	3.1	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	
27	7.7	5.5	4.6	4.1	3.8	3.6	3.4	3.3	3.1	3.1	2.9	2.8	2.6	2.6	2.5	2.4	2.3	2.2	
28	7.6	5.5	4.6	4.1	3.8	3.5	3.4	3.2	3.1	3.0	2.9	2.8	2.6	2.5	2.4	2.4	2.3	2.2	
29	7.6	5.4	4.5	4.0	3.7	3.5	3.3	3.2	3.1	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1	
30	7.6	5.4	4.5	4.0	3.7	3.5	3.3	3.2	3.1	3.0	2.8	2.7	2.5	2.5	2.4	2.3	2.2	2.1	
40	7.3	5.2	4.3	3.8	3.5	3.3	3.1	3.0	2.9	2.8	2.7	2.5	2.4	2.3	2.2	2.1	2.0	1.9	
60	7.1	5.0	4.1	3.6	3.3	3.1	3.0	2.8	2.7	2.6	2.5	2.4	2.2	2.1	2.0	1.9	1.8	1.7	
120	6.9	4.8	3.9	3.5	3.2	3.0	2.8	2.7	2.6	2.5	2.3	2.2	2.0	2.0	1.9	1.8	1.7	1.5	



Table 6B: Critical Values of F-distribution (Level of Significance 5%)

Table shows for a particular combination of numerator and denominator degrees of freedom. The critical values of F corresponding to 5% upper tail area

denominator d. f.	Numerator degree of freedom (d.f)											
	1	2	3	4	5	6	7	8	9	10	12	15
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9
2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4
3	10.1	9.6	9.3	9.1	9.0	8.9	8.9	8.8	8.8	8.8	8.7	8.7
4	7.7	6.9	6.6	6.4	6.3	6.2	6.1	6.0	6.0	6.0	5.9	5.9
5	6.6	5.8	5.4	5.2	5.1	5.0	4.9	4.8	4.8	4.7	4.7	4.6
6	6.0	5.1	4.8	4.5	4.4	4.3	4.2	4.1	4.1	4.1	4.0	3.9
7	5.6	4.7	4.3	4.1	4.0	3.9	3.8	3.7	3.7	3.6	3.6	3.5
8	5.3	4.5	4.1	3.8	3.7	3.6	3.5	3.4	3.4	3.3	3.3	3.2
9	5.1	4.3	3.9	3.6	3.5	3.4	3.3	3.2	3.2	3.1	3.1	3.0
10	5.0	4.1	3.7	3.5	3.3	3.2	3.1	3.1	3.0	3.0	2.9	2.8
11	4.8	4.0	3.6	3.4	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6
12	4.7	3.9	3.5	3.3	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5
13	4.7	3.8	3.4	3.2	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4
14	4.6	3.7	3.3	3.1	3.0	2.8	2.8	2.7	2.6	2.6	2.5	2.4
15	4.5	3.7	3.3	3.1	2.9	2.8	2.7	2.6	2.6	2.5	2.4	2.3
16	4.5	3.6	3.2	3.0	2.9	2.7	2.7	2.6	2.5	2.4	2.4	2.3
17	4.5	3.6	3.2	3.0	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3
18	4.4	3.6	3.2	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2
19	4.4	3.5	3.1	2.9	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.2
20	4.4	3.5	3.1	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1
21	4.3	3.5	3.1	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1
22	4.3	3.4	3.0	2.8	2.7	2.5	2.5	2.4	2.3	2.3	2.2	2.1
23	4.3	3.4	3.0	2.8	2.6	2.5	2.4	2.4	2.3	2.3	2.2	2.1
24	4.3	3.4	3.0	2.8	2.6	2.5	2.4	2.4	2.3	2.3	2.2	2.1
25	4.2	3.4	3.0	2.8	2.6	2.5	2.4	2.3	2.3	2.2	2.2	2.1
26	4.2	3.4	3.0	2.7	2.6	2.5	2.4	2.3	2.3	2.2	2.1	2.0
27	4.2	3.4	3.0	2.7	2.6	2.5	2.4	2.3	2.3	2.2	2.1	2.0
28	4.2	3.3	2.9	2.7	2.6	2.4	2.4	2.3	2.2	2.2	2.1	2.0
29	4.2	3.3	2.9	2.7	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.0
30	4.2	3.3	2.9	2.7	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.0
40	4.1	3.2	2.8	2.6	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9
60	4.0	3.2	2.8	2.5	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8
120	3.9	3.1	2.7	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.7

TABLE 7: Runs Test

This table gives upper and lower critical values of r . Reject the Null hypothesis of Randomness at the 5% level if r , the number of runs is less than or equal to the first value in Table 4 or Greater than or equal to the second value in Table 4. For example if $n_1 = 10$, $n_2 = 11$ and $r = 8$, we find the numbers 6 and 17 on the table. Since 8 is between these two numbers, we do not reject the hypothesis of randomness.

n1	n2																		
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2											2	2	2	2	2	2	2	2	2
3					2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
4				2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4
5		2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	5	5	5
6		-	9	10	10	11	11	-	-	-	-	-	-	-	-	-	-	-	-
7		2	2	3	3	3	4	4	4	4	4	5	5	5	5	6	6	6	6
8		-	-	11	12	13	13	14	14	14	14	15	15	15	15	-	-	-	-
9		2	3	3	4	4	5	5	5	6	6	6	6	6	6	7	7	7	7
10		-	-	-	13	14	14	15	16	16	16	17	17	17	17	18	18	18	18
11		2	3	4	4	5	5	6	6	7	7	7	8	8	8	9	9	9	9
12	2	2	3	4	4	5	6	6	7	7	7	8	8	8	9	9	9	10	10
13	-	-	-	-	13	14	16	16	17	18	19	19	20	20	21	21	21	22	22
14	2	2	3	4	5	5	6	7	7	8	8	9	9	9	10	10	10	11	11
15	-	-	-	-	-	15	16	17	18	19	20	20	21	22	22	23	23	23	24
16	2	3	4	4	5	6	6	7	8	8	9	9	10	10	11	11	11	12	12
17	-	-	-	-	-	-	17	18	19	20	21	21	22	23	23	24	25	25	25
18	2	3	4	5	5	6	7	8	8	9	9	10	10	11	11	12	12	13	13
19	-	-	-	-	-	-	17	18	20	21	22	23	23	24	25	26	26	27	27
20	2	3	4	5	6	6	7	8	9	9	10	10	11	12	12	13	13	14	14
	-	-	-	-	-	-	17	18	20	21	22	23	24	25	25	26	27	27	28



TABLE 8A: Critical values of Wilcoxon Signed Rank Sum Test (Matched Samples).

This table gives critical values for a one-sided test, so that the values of α must be doubled for a two-sided test. For example, if we are testing the null hypothesis that two medians are equal, $T = 6$, $n = 8$ and $\alpha = .05$, we look in the $\alpha = .025$ column and find a critical value of 4. Since T is above 4, we do not reject the null hypothesis of equality. We reject the null hypothesis if $T \leq$ the table value.

n	$\alpha = .05$	$\alpha = .025$	$\alpha = .01$	$\alpha = .005$	n	$\alpha = .05$	$\alpha = .025$	$\alpha = .01$	$\alpha = .005$
5	1	-	-	-	28	130	117	102	92
6	2	1	-	-	29	141	127	111	100
7	4	2	0	-	30	152	137	120	109
8	6	4	2	0	31	163	148	130	118
9	8	6	3	2	32	175	159	141	128
10	11	8	5	3	33	188	171	151	138
11	14	11	7	5	34	201	183	162	149
12	17	14	10	7	35	214	195	174	160
13	21	17	13	10	36	228	208	186	171
14	26	21	16	13	37	242	222	198	183
15	30	25	20	16	38	256	235	211	195
16	36	30	24	19	39	271	250	224	208
17	41	35	28	23	40	287	264	238	221
18	47	40	33	28	41	303	279	252	234
19	54	46	38	32	42	319	295	267	248
20	60	52	43	37	43	336	311	281	262
21	68	59	49	43	44	353	327	297	277
22	75	66	56	49	45	371	344	313	292
23	83	73	62	55	46	389	361	329	307
24	92	81	69	61	47	408	379	345	323
25	101	90	77	68	48	427	397	362	339
26	110	98	85	76	49	446	415	380	356
27	120	107	93	84	50	466	434	398	373



TABLE 8B: Critical values of the Mann-Whitney U test (Two Tail Test)

n_2	α	n_1																	
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
3	0.05	--	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
	0.01	--	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	3	3
4	0.05	--	0	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	14
	0.01	--	--	0	0	0	1	1	2	2	3	3	4	5	5	6	6	7	8
5	0.05	0	1	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
	0.01	--	--	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
6	0.05	1	2	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
	0.01	--	0	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
7	0.05	1	3	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
	0.01	--	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
8	0.05	2	4	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
	0.01	--	1	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
9	0.05	2	4	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
	0.01	0	1	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
10	0.05	3	5	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
	0.01	0	2	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
11	0.05	3	6	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
	0.01	0	2	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
12	0.05	4	7	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
	0.01	1	3	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
13	0.05	4	8	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
	0.01	1	3	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
14	0.05	5	9	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
	0.01	1	4	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
15	0.05	5	10	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
	0.01	2	5	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
16	0.05	6	11	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
	0.01	2	5	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
17	0.05	6	11	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
	0.01	2	6	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
18	0.05	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
	0.01	2	6	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
19	0.05	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
	0.01	3	7	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
20	0.05	8	14	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127
	0.01	3	8	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105



TABLE 8B: Critical values of the Mann-Whitney U test (One Tail Test)

n ₁																				
n ₂	A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
3	0.05	0	0	1	2	2	3	4	4	5	5	6	7	7	8	9	9	10	11	
	0.01	--	0	0	0	0	0	1	1	1	2	2	2	3	3	4	4	4	5	
4	0.05	0	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	
	0.01	--	--	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	
5	0.05	1	2	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25	
	0.01	--	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
6	0.05	2	3	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32	
	0.01	--	1	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22	
7	0.05	2	4	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39	
	0.01	0	1	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28	
8	0.05	3	5	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47	
	0.01	0	2	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34	
9	0.05	4	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	
	0.01	1	3	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40	
10	0.05	4	7	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62	
	0.01	1	3	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47	
11	0.05	5	8	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69	
	0.01	1	4	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53	
12	0.05	5	9	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77	
	0.01	2	5	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60	
13	0.05	6	10	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84	
	0.01	2	5	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67	
14	0.05	7	11	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92	
	0.01	2	6	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73	
15	0.05	7	12	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100	
	0.01	3	7	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80	
16	0.05	8	14	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107	
	0.01	3	7	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87	
17	0.05	9	15	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115	
	0.01	4	8	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93	
18	0.05	9	16	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123	
	0.01	4	9	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100	
19	0.05	10	17	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130	
	0.01	4	9	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107	
20	0.05	11	18	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138	
	0.01	5	10	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114	



TABLE 9: Simplified Wilcoxon-Mann-Whitney Rank Sum Test for Two Independent Samples

This table gives the p-value corresponding to the rank sum W of the smaller sample when ranking is done starting from the end where the smaller sample is concentrated. p-values are doubled for two-sided tests. For example, suppose we are testing equality of medians for $\alpha = .05$, $n_2 = 6$ and $n_1 = 3$, and that $W = 8$. The p-value for 8 is .0476, which we double to .0952. Since this is above α , we do not reject the null hypothesis.

Larger Sample size $n_2 = 2$

Smaller Sample Size (n_1)			
W	P	W	P
1	0.333	3	0.167
		4	0.333

Larger Sample size $n_2 = 4$

Large Sample Size $n_2 = 3$

Small Sample Size (n_1)					
1	2	3			
W	p	W	P	W	P
1	0.25	3	0.1	6	0.05
2	0.5	4	0.2	7	0.1
		5	0.4	8	0.2
		6	0.6	9	0.35
				10	0.5

Small Sample Size (n_1)							
1	2	3	4				
W	p	W	P	W	P	W	p
1	0.2	3	0.0667	6	0.0286	10	0.0143
2	0.4	4	0.133	7	0.057	11	0.029
3	0.6	5	0.267	8	0.114	12	0.057
		6	0.4	9	0.2	13	0.1
		7	0.6	10	0.314	14	0.171
				11	0.429	15	0.243
				12	0.571	16	0.343
						17	0.443
						17	0.557

Larger Sample size $n_2 = 5$

Smaller Sample Size (n_1)									
1	2	3	4	5					
W	p	W	P	W	P	W	p	W	P
1	0.1667	3	0.0476	6	0.0179	10	0.0079	15	0.0040
2	0.333	4	0.095	7	0.036	11	0.016	16	0.008
3	0.5	5	0.191	8	0.071	12	0.032	17	0.016
		6	0.286	9	0.125	13	0.056	18	0.028
		7	0.429	10	0.196	14	0.095	19	0.048
		8	0.571	11	0.286	15	0.143	20	0.075
				12	0.393	16	0.206	21	0.111
				13	0.5	17	0.278	22	0.155
						18	0.365	23	0.21
						19	0.452	24	0.274
						20	0.548	25	0.345
								26	0.421
								27	0.5



Continue.....

Larger Sample size $n_2 = 6$

Smaller Sample size (n_1)											
1		2		3		4		5		6	
W	p	W	P	W	P	W	P	W	P	W	P
1	0.1429	3	0.0357	6	0.0119	10	0.0048	15	0.0022	21	0.0011
2	0.286	4	0.071	7	0.024	11	0.01	16	0.004	22	0.002
3	0.429	5	0.143	8	0.048	12	0.019	17	0.009	23	0.004
4	0.571	6	0.214	9	0.083	13	0.033	18	0.015	24	0.008
		7	0.321	10	0.131	14	0.057	19	0.026	25	0.013
		8	0.429	11	0.191	15	0.086	20	0.041	26	0.021
		9	0.571	12	0.274	16	0.129	21	0.063	27	0.033
				13	0.357	17	0.176	22	0.089	28	0.047
				14	0.452	18	0.238	23	0.123	29	0.066
				15	0.548	19	0.305	24	0.165	30	0.09
						20	0.381	25	0.214	31	0.12
						21	0.457	26	0.268	32	0.155
						22	0.543	27	0.331	33	0.197
								28	0.396	34	0.242
								29	0.465	35	0.294
								30	0.535	36	0.36
										37	0.409
										38	0.469
										39	0.531



Continue.....

Larger Sample size $n_2 = 7$

Smaller sample size(n_1)													
1	2	3	4	5	6	7							
W	p	W	P	W	P	W	P	W	P	W	P	W	P
1	0.125	3	0.028	6	0.008	10	0.003	15	0.001	21	6E-04	28	3E-04
2	0.25	4	0.056	7	0.017	11	0.006	16	0.003	22	0.001	29	6E-04
3	0.375	5	0.111	8	0.033	12	0.012	17	0.005	23	0.002	30	0.001
4	0.5	6	0.167	9	0.058	13	0.021	18	0.009	24	0.004	31	0.002
		7	0.25	10	0.092	14	0.036	19	0.015	25	0.007	32	0.004
		8	0.333	11	0.133	15	0.055	20	0.024	26	0.011	33	0.006
		9	0.444	12	0.192	16	0.082	21	0.037	27	0.018	34	0.009
		10	0.556	13	0.258	17	0.115	22	0.053	28	0.026	35	0.013
				14	0.333	18	0.158	23	0.075	29	0.037	36	0.019
				15	0.417	19	0.206	24	0.101	30	0.051	37	0.027
				16	0.5	20	0.264	25	0.134	31	0.069	38	0.036
						21	0.324	26	0.172	32	0.09	39	0.049
						22	0.394	27	0.216	33	0.117	40	0.064
						23	0.464	28	0.265	34	0.147	41	0.083
						24	0.536	29	0.319	35	0.183	42	0.104
								30	0.378	36	0.223	43	0.13
								31	0.438	37	0.267	44	0.159
								32	0.5	38	0.314	45	0.191
										39	0.365	46	0.228
										40	0.418	47	0.268
										41	0.473	48	0.31
										42	0.527	49	0.355
												50	0.402
												51	0.451
												52	0.5



TABLE 10 A : Critical Values for Kolmogorov-Smirnov Test

n	$\alpha = .20$	$\alpha = .10$	$\alpha = .05$	$\alpha = .02$	$\alpha = .01$	n	$\alpha = .20$	$\alpha = .10$	$\alpha = .05$	$\alpha = .02$	$\alpha = .01$
1	.900	.950	.975	.990	.995	21	.226	.259	.287	.321	.344
2	.684	.776	.842	.900	.929	22	.221	.253	.281	.314	.337
3	.565	.636	.708	.785	.829	23	.216	.247	.275	.307	.330
4	.493	.565	.624	.689	.734	24	.212	.242	.269	.301	.323
5	.447	.509	.563	.627	.669	25	.208	.238	.264	.295	.317
6	.410	.468	.519	.577	.617	26	.204	.233	.259	.290	.311
7	.381	.436	.483	.538	.576	27	.200	.229	.254	.284	.305
8	.358	.410	.454	.507	.542	28	.197	.225	.250	.279	.300
9	.339	.387	.430	.480	.513	29	.193	.221	.246	.275	.295
10	.323	.369	.409	.457	.489	30	.190	.218	.242	.270	.290
11	.308	.352	.391	.437	.468	31	.187	.214	.238	.266	.285
12	.296	.338	.375	.419	.449	32	.184	.211	.234	.262	.281
13	.285	.325	.361	.404	.432	33	.182	.208	.231	.258	.277
14	.275	.314	.349	.390	.418	34	.179	.205	.227	.254	.273
15	.266	.304	.338	.377	.404	35	.177	.202	.224	.251	.269
16	.258	.295	.327	.366	.392	36	.174	.199	.221	.247	.265
17	.250	.286	.318	.355	.381	37	.172	.196	.218	.244	.262
18	.244	.279	.309	.346	.371	38	.170	.194	.215	.241	.258
19	.237	.271	.301	.337	.361	39	.168	.191	.213	.238	.255
20	.232	.265	.294	.329	.352	40	.165	.189	.210	.235	.252
Over 40							$\frac{1.07}{\sqrt{n}}$	$\frac{1.22}{\sqrt{n}}$	$\frac{1.36}{\sqrt{n}}$	$\frac{1.52}{\sqrt{n}}$	$\frac{1.63}{\sqrt{n}}$



Table 10 B : Critical values of Kolmogorov-Smirnov Test Statistics for two samples of unequal size

One-Sided Test:		0.1	0.05	0.025	0.01	0.005
Level of Significance						
Two-Sided Test		0.2	0.1	0.05	0.02	0.01
Level of Significance						
n1	n2					
1	9	17/18				
	10	8/9				
2	3	5/6				
	4	3/4				
	5	4/5	4/5			
	6	5/6	5/6			
	7	5/7	6/7			
	8	3/4	7/8	7/8		
	9	7/9	8/9	8/9		
	10	7/10	4/5	9/10		
3	4	3/4	3/4			
	5	2/3	4/5	4/5		
	6	2/3	2/3	5/6		
	7	2/3	5/7	6/7	6/7	
	8	5/8	3/4	3/4	7/8	
	9	2/3	2/3	7/9	8/9	8/9
	10	3/5	2/3	4/5	9/10	9/10
	12	7/12	2/3	3/4	5/6	11/12
4	5	3/5	3/4	4/5	4/5	
	6	7/12	2/3	3/4	5/6	5/6
	7	17/28	5/7	3/4	6/7	6/7
	8	5/8	5/8	3/4	7/8	7/8
	9	5/9	2/3	3/4	7/9	8/9
	10	11/20	13/20	7/10	4/5	4/5
	12	7/12	2/3	2/3	3/4	5/6
	16	9/16	5/8	11/16	3/4	13/16
5	6	3/5	2/3	2/3	5/6	5/6
	7	4/7	23/35	5/7	29/35	6/7
	8	11/20	5/8	27/40	4/5	4/5
	9	5/9	3/5	31/45	7/9	4/5
	10	1/2	3/5	7/10	7/10	4/5
	15	8/15	3/5	2/3	11/15	11/15
	20	1/2	11/20	3/5	7/10	3/4



Continue.....

6	7	23/42	4/7	29/42	5/7	5/6
	8	1/2	7/12	2/3	3/4	3/4
	9	1/2	5/9	2/3	13/18	7/9
	10	1/2	17/30	19/30	7/10	11/15
	12	1/2	7/12	7/12	2/3	3/4
	18	4/9	5/9	11/18	2/3	13/18
	24	11/24	1/2	7/12	5/8	2/3
7	8	27/56	33/56	5/8	41/56	3/4
	9	31/63	5/9	40/63	5/7	47/63
	10	33/70	5/9	40/63	5/7	47/63
	14	3/7	1/2	4/7	9/14	5/7
	28	3/7	13/28	15/28	17/28	9/14
8	9	4/9	13/24	5/8	2/3	3/4
	10	19/40	21/40	23/40	27/40	47/63
	12	11/24	1/2	7/12	5/8	2/3
	16	7/16	1/2	9/16	5/8	5/8
	32	13/32	7/16	1/2	9/16	19/32
9	10	7/15	1/2	26/45	2/3	3/4
	12	4/9	1/2	5/9	11/18	2/3
	15	19/45	22/45	8/15	3/5	29/45
	18	7/18	4/9	1/2	5/9	11/18
	36	13/36	5/12	17/36	19/36	5/9
10	15	2/5	7/15	1/2	17/30	19/30
	20	2/5	7/15	1/2	17/30	19/30
	40	7/20	2/5	9/20	1/2	
12	15	23/60	9/20	1/2	11/20	7/12
	16	3/8	7/16	23/48	13/24	7/12
	18	11/36	5/12	17/36	19/36	5/9
	20	13/30	5/12	7/15	31/60	17/30
15	20	7/20	2/5	13/30	29/69	31/60
16	20	27/80	31/80	17/40	19/40	41/80



TABLE 11A: P-values for the Kruskal-Wallis H

n1	n2	n3	H	P-Value		n1	n2	n3	H	P-Value
2	1	1	2.7	0.5		4	3	2	6.4444	0.009
									6.3	0.011
2	2	1	3.6	0.267					5.444	0.046
									5.4	0.051
2	2	2	4.5714	0.067					4.5111	0.098
			3.7143	0.2					4.4444	0.102
3	1	1	3.2	0.3		4	3	3	6.7455	0.01
									6.7091	0.013
3	2	1	4.2857	0.1					5.7909	0.046
			3.8571	0.133					5.7273	0.05
									4.7091	0.092
									4.7	0.101
3	2	2	5.3572	0.029						
			4.7143	0.048						
			4.5	0.067						
			4.4643	0.105						
3	3	1	5.1429	0.043		4	4	1	6.6667	0.01
			4.5714	0.1					6.1667	0.022
			4	0.129					4.9667	0.048
									4.8667	0.054
									4.1667	0.082
									4.0667	0.102
3	3	2	6.25	0.011						
			5.3611	0.032		4	4	2	7.0364	0.006
			5.1389	0.061					8.8727	0.011
			4.5556	0.1					5.4545	0.046
			4.25	0.121					5.2364	0.052
									4.5545	0.098
									4.4455	0.103
3	3	3	7.2	0.004						
			6.4889	0.001		4	4	3	7.1439	0.01
			5.6889	0.029					7.1364	0.011
			5.6	0.05					5.5985	0.049
			5.0667	0.086					5.5758	0.051
			4.6222	0.1					4.5455	0.099
									4.4773	0.102
4	1	1	3.5714	0.2						
4	2	1	4.8214	0.057		4	4	4	7.6538	0.008
			4.5	0.076					7.5385	0.011
			4.0179	0.114					5.6923	0.049
									5.6538	0.054
									4.6539	0.097
									4.5001	0.104
4	3	1	5.8333	0.021						
			5.2083	0.05						
			5	0.057		5	1	1	3.8571	0.143
			4.0556	0.093						
			3.8889	0.129						
						5	2	1	5.25	0.036
									5	0.048
									4.45	0.071
									4.2	0.095
									4.05	0.119



TABLE 11B: P-values for the Kruskal-Wallis H

n1	n2	n3	H	P-Value		n1	n2	n3	H	P-Value
5	2	2	6.5333	0.008		5	4	4	7.7604	0.009
			6.1333	0.013					7.744	0.011
			5.16	0.034					5.6571	0.049
			5.04	0.056					5.6176	0.05
			4.3733	0.09					4.6187	0.1
			4.2933	0.112					4.5527	0.102
5	3	1	6.4	0.012		5	5	1	7.3091	0.009
			4.96	0.048					6.8364	0.011
			4.8711	0.052					5.1273	0.046
			4.0178	0.095					4.9091	0.053
			3.84	0.123					4.1091	0.086
									4.0364	0.105
5	3	2	6.9091	0.009		5	5	2	7.3385	0.01
			6.8281	0.01					7.2692	0.01
			5.2509	0.049					5.3385	0.047
			5.1055	0.052					5.2462	0.051
			4.6509	0.091					4.6231	0.097
			4.4945	0.101					4.5077	0.1
5	3	3	7.0788	0.009		5	5	3	7.578	0.01
			6.9818	0.011					7.5429	0.01
			5.6485	0.049					5.7055	0.046
			5.5152	0.051					5.6264	0.051
			4.5333	0.097					4.5451	0.1
			4.4121	0.109					4.5363	0.102
5	4	1	6.9545	0.008		5	5	4	7.8229	0.01
			6.84	0.011					7.7914	0.01
			4.9855	0.044					5.6657	0.049
			4.86	0.056					5.6429	0.05
			3.9873	0.098					4.5229	0.1
			3.96	0.102					4.52	0.101
5	4	2	7.2045	0.009		5	5	5	8	0.009
			7.1182	0.01					7.98	0.01
			5.2727	0.049					5.78	0.049
			5.2682	0.05					5.66	0.051
			4.5609	0.098					4.56	0.1
			4.5182	0.101					4.5	0.102
5	4	3	7.4449	0.01						
			7.3949	0.011						
			5.6564	0.049						
			5.6308	0.05						
			4.5487	0.099						
			4.5232	0.103						



TABLE 12: Critical values of Kendall's

$\alpha = .05$

m	$n=3$	$n=4$	$n=5$	$n=6$	$n=7$
3			64.4	103.9	157.3
4		49.5	88.4	143.3	217.0
5		62.6	112.3	182.4	276.2
6		75.7	136.1	221.4	335.2
8	48.1	101.7	183.7	299.0	453.1
10	60.0	127.8	231.2	376.7	571.0
15	89.8	192.9	349.8	570.5	864.9
20	119.7	258.0	468.5	764.4	1158.7

$\alpha = .01$

m	$n=3$	$n=4$	$n=5$	$n=6$	$n=7$
3			75.6	122.8	185.6
4		61.4	109.3	176.2	265.0
5		80.5	142.8	229.4	343.8
6		99.5	176.1	282.4	422.6
8	66.8	137.4	242.7	388.3	579.9
10	85.1	175.3	309.1	494.0	737.0
15	131.0	269.8	475.2	758.2	1129.5
20	177.0	364.2	641.2	764.4	1158.7

Additional values for $n=3$

m	$\alpha = 0.05$	$\alpha = 0.01$
9	54	75.9
12	71.9	103.5
14	83.8	121.9
16	95.8	140.2
18	107.7	158.6



TABLE 13: Critical values of Spearman's r_s

n	$\alpha = .100$	$\alpha = .050$	$\alpha = .025$	$\alpha = .010$	$\alpha = .005$	$\alpha = .001$
4	.8000	.8000				
5	.7000	.8000	.9000	.9000		
6	.6000	.7714	.8286	.8857	.9429	
7	.5357	.6786	.7450	.8571	.8929	.9643
8	.5000	.6190	.7143	.8095	.8571	.9286
9	.4667	.5833	.6833	.7667	.8167	.9000
10	.4424	.5515	.6364	.7333	.8167	.8667
11	.4182	.5273	.6091	.7000	.7818	.8364
12	.3986	.4965	.5804	.6713	.7455	.8182
13	.3791	.4760	.5549	.6429	.7273	.7912
14	.3626	.4593	.5341	.6220	.6978	.7670
15	.3500	.4429	.5179	.6000	.6747	.7464
16	.3382	.4265	.5000	.5824	.6536	.7265
17	.3260	.4118	.4853	.5637	.6324	.7083
18	.3148	.3994	.4716	.5480	.6152	.6904
19	.3070	.3895	.4579	.5333	.5975	.6737
20	.2977	.3789	.4451	.5203	.5684	.6586
21	.2909	.3688	.4351	.5078	.5545	.6455
22	.2829	.3597	.4241	.4963	.5426	.6318
23	.2767	.3518	.4150	.4852	.5306	.6186
24	.2704	.3435	.4061	.4748	.5200	.6070
25	.2646	.3362	.3977	.4654	.5100	.5962
26	.2588	.3299	.3894	.4564	.5002	.5856
27	.2540	.3236	.3822	.4481	.4915	.5757
28	.2490	.3175	.3749	.4401	.4828	.5660
29	.2443	.3113	.3685	.4320	.4744	.5567
30	.2400	.3059	.3620	.4251	.4665	.5479



Table 14: Control Chart Factor

Obs n	A	A2	A3	d2	d3	D1	D2	D3	D4	c4	B3	B4	B5	B6
2	2.121	1.880	2.659	1.128	0.853	0	3.686	0	3.267	0.7979	0	3.267	0	2.606
3	1.732	1.023	1.954	1.693	0.888	0	4.358	0	2.574	0.8862	0	2.568	0	2.276
4	1.500	0.729	1.628	2.059	0.880	0	4.698	0	2.282	0.9213	0	2.266	0	2.088
5	1.342	0.577	1.427	2.326	0.864	0	4.918	0	2.114	0.9400	0	2.089	0	1.964
6	1.225	0.483	1.287	2.534	0.848	0	5.078	0	2.004	0.9515	0.030	1.970	0.029	1.874
7	1.134	0.419	1.182	2.704	0.833	0.204	5.204	0.076	1.924	0.9594	0.118	1.882	0.113	1.806
8	1.061	0.373	1.099	2.847	0.820	0.388	5.306	0.136	1.864	0.9650	0.185	1.815	0.179	1.751
9	1.000	0.337	1.032	2.970	0.808	0.547	5.393	0.184	1.816	0.9693	0.239	1.761	0.232	1.707
10	0.949	0.308	0.975	3.078	0.797	0.687	5.469	0.223	1.777	0.9727	0.284	1.716	0.276	1.669
11	0.905	0.285	0.927	3.173	0.787	0.811	5.535	0.256	1.744	0.9754	0.321	1.679	0.313	1.637
12	0.866	0.266	0.886	3.258	0.778	0.922	5.594	0.283	1.717	0.9776	0.354	1.646	0.346	1.610
13	0.832	0.249	0.850	3.336	0.770	1.025	5.647	0.307	1.693	0.9794	0.382	1.618	0.374	1.585
14	0.802	0.235	0.817	3.407	0.763	1.118	5.696	0.328	1.672	0.9810	0.406	1.594	0.399	1.563
15	0.775	0.223	0.789	3.472	0.756	1.203	5.741	0.347	1.653	0.9823	0.428	1.572	0.421	1.544
16	0.750	0.212	0.763	3.532	0.750	1.282	5.782	0.363	1.637	0.9835	0.448	1.552	0.440	1.526
17	0.728	0.203	0.739	3.588	0.744	1.356	5.820	0.378	1.622	0.9845	0.466	1.534	0.458	1.511
18	0.707	0.194	0.718	3.640	0.739	1.424	5.856	0.391	1.608	0.9854	0.482	1.518	0.475	1.496
19	0.688	0.187	0.698	3.689	0.734	1.487	5.891	0.403	1.597	0.9862	0.497	1.503	0.490	1.483
20	0.671	0.180	0.680	3.735	0.729	1.549	5.921	0.415	1.585	0.9869	0.510	1.490	0.504	1.470
21	0.655	0.173	0.663	3.778	0.724	1.605	5.951	0.425	1.575	0.9876	0.523	1.477	0.516	1.459
22	0.640	0.167	0.647	3.819	0.720	1.659	5.979	0.434	1.566	0.9882	0.534	1.466	0.528	1.448
23	0.626	0.162	0.633	3.858	0.716	1.710	6.006	0.443	1.557	0.9887	0.545	1.455	0.539	1.438
24	0.612	0.157	0.619	3.895	0.712	1.759	6.031	0.451	1.548	0.9892	0.555	1.445	0.549	1.429
25	0.600	0.153	0.606	3.931	0.708	1.806	6.056	0.459	1.541	0.9896	0.565	1.435	0.559	1.420



Table 15: Random Number Table

60901	86044	7747	73042	67801	9003	40676	41999	2631	44187	23486	16835	85355	35703
65730	87417	66214	72780	85488	21410	95401	55034	86706	11027	49222	1859	71312	52786
97078	48117	35890	58709	6447	7472	73847	85087	84351	3820	26938	24170	25885	37003
89902	38515	21597	1662	74455	5865	96638	52297	28144	41294	42677	58034	47144	89160
83689	22289	35129	7596	84908	23732	20216	59302	7637	29320	80733	69226	80406	68672
35546	20737	6731	51586	93754	82337	60901	1419	32979	64398	81854	8805	60886	36307
4502	56362	77623	79025	48618	78805	70964	59070	51994	66701	49973	41339	29086	93533
54166	61523	61357	53750	46290	47493	13453	508	83361	35567	5453	55186	57053	89622
309	73306	64600	53630	8444	62183	11474	92759	4764	7949	38082	40843	31060	1480
40651	65831	82823	73888	81691	62232	88711	17339	79229	4232	69766	6612	24540	92762
62732	64935	53258	35204	71418	72098	20961	91827	24791	86025	80461	44988	75146	88023
32121	76096	20183	70762	38895	62380	99428	56030	22318	78952	81257	10828	43176	13495
93606	4417	94079	72985	26111	60187	57704	86946	40583	83208	19951	15071	17954	97247
37128	87126	24957	93423	74753	28751	33723	24109	97006	47190	15999	24782	32451	1381
9550	47821	54629	7448	2198	32973	93983	76148	66155	52369	37858	76389	74068	76850
13558	87407	68511	53299	94999	62269	83196	52402	58533	52294	69020	47172	47470	84840
81082	86887	27250	88262	84791	9492	59723	13669	6928	11018	70244	97413	42461	52022
91648	98133	80685	61238	34392	78917	62296	73636	77674	3249	40220	39528	20175	37609
6224	76091	8071	95854	74755	31341	16778	10585	62968	99019	30234	63832	19420	93161
76157	35079	59433	39737	89117	68801	46322	56107	51997	50261	6608	73538	1035	4347
84735	89045	58437	92984	34417	36735	40320	31902	84812	82246	63880	13694	90624	31367
3558	15884	55993	80966	91103	5446	53914	35498	61992	23871	33323	75654	39425	98040
3111	37445	16099	34915	28301	44177	50122	56066	45818	39250	43103	11952	66161	34822
8477	5646	61594	13463	78743	3903	68273	29926	44828	66643	17083	79596	46012	16767
47745	84154	11234	86132	22229	771	19230	41867	56009	52140	3491	90182	33289	23106
25126	25540	79526	43202	21035	19911	97384	71045	85944	94069	45740	49758	65844	24465
88158	92068	19289	30871	13120	46930	92633	51135	60737	91561	61680	58966	7227	41934
69385	27292	45729	15173	51866	87504	20392	46900	75388	41581	2092	23476	98985	10050
2388	56199	23429	10575	74010	58989	35311	48399	99168	37735	23858	66919	44809	85465
66969	15379	42989	90008	33659	54850	35404	30114	19810	79308	55854	57055	26810	55830

Random number table generated from Microsoft Excel for lower digit 10 to upper digit 100000

TABLE 16 A: DURBIN-WATSON d STATISTICS: SIGNIFICANCE POINTS OF d_L and d_U AT 0.01 LEVEL OF SIGNIFICANCE

n	k'=1		k'=2		k'=3		k'=4		k'=5		k'=6		k'=7		k'=8		k'=9		k'=10	
	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U
6	0.39	1.142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	0.435	1.036	0.294	1.676	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	0.497	1.003	0.345	1.489	0.229	1.875	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.554	0.998	0.408	1.389	0.279	1.875	0.133	2.433	-	-	-	-	-	-	-	-	-	-	-	-
10	0.604	1.001	0.466	1.33	0.34	1.733	0.23	2.193	0.15	2.69	-	-	-	-	-	-	-	-	-	-
11	0.653	1.01	0.519	1.297	0.396	1.64	0.286	2.03	0.193	2.453	0.124	2.892	-	-	-	-	-	-	-	-
12	0.697	1.023	0.569	1.274	0.449	1.575	0.339	1.913	0.244	2.28	0.164	2.665	0.15	3.053	-	-	-	-	-	-
13	0.738	1.038	0.616	1.261	0.499	1.526	0.391	1.826	0.294	2.15	0.211	2.49	0.14	2.838	0.09	3.182	-	-	-	-
14	0.776	1.054	0.66	1.254	0.547	1.49	0.441	1.757	0.343	2.049	0.257	2.354	0.183	2.667	0.122	2.981	0.078	3.287	-	-
15	0.881	1.07	0.7	1.252	0.591	1.464	0.448	1.704	0.391	1.967	0.303	2.244	0.226	2.53	0.161	2.187	0.107	3.101	0.068	3.374
16	0.844	1.086	0.737	1.252	0.633	1.446	0.532	1.663	0.437	1.9	0.349	2.153	0.269	2.416	0.2	2.681	0.142	2.944	0.094	3.201
17	0.874	1.102	0.772	1.255	0.672	1.432	0.574	1.63	0.48	1.847	0.393	2.078	0.313	2.319	0.241	2.566	0.179	2.811	0.127	3.053
18	0.902	1.118	0.805	1.259	0.708	1.422	0.613	1.604	0.522	1.803	0.435	2.015	0.355	2.238	0.282	2.467	0.216	2.697	0.16	2.925
19	0.928	1.132	0.835	1.265	0.742	1.415	0.65	1.584	0.561	1.767	0.476	1.963	0.396	2.169	0.322	2.381	0.255	2.597	0.196	2.813
20	0.952	1.147	0.863	1.271	0.773	1.411	0.685	1.567	0.598	1.737	0.515	1.918	0.436	2.11	0.362	2.308	0.294	2.51	0.232	2.714
21	0.975	1.161	0.89	1.277	0.803	1.408	0.718	1.554	0.633	1.712	0.552	1.881	0.474	2.059	0.4	2.244	0.331	2.434	0.268	2.625
22	0.997	1.174	0.914	1.284	0.831	1.407	0.748	1.543	0.667	1.691	0.587	1.849	0.51	2.015	0.437	2.188	0.368	2.367	0.304	2.548
23	1.018	1.187	0.938	1.291	0.858	1.407	0.777	1.534	0.698	1.673	0.62	1.821	0.545	1.977	0.473	2.14	0.404	2.308	0.34	2.479
24	1.037	1.199	0.96	1.298	0.882	1.407	0.805	1.528	0.728	1.658	0.652	1.797	0.578	1.944	0.507	2.097	0.439	2.255	0.375	2.417
25	1.055	1.211	0.981	1.305	0.906	1.409	0.831	1.523	0.756	1.645	0.682	1.776	0.61	1.915	0.54	2.059	0.473	2.209	0.409	2.362
26	1.072	1.222	1.001	1.312	0.928	1.411	0.855	1.518	0.783	1.635	0.711	1.759	0.64	1.889	0.572	2.026	0.505	2.168	0.441	2.313
27	1.089	1.233	1.019	1.319	0.949	1.413	0.878	1.515	0.808	1.626	0.738	1.743	0.669	1.867	0.602	1.997	0.536	2.131	0.473	2.269
28	1.104	1.244	1.037	1.325	0.969	1.415	0.9	1.513	0.832	1.618	0.764	1.729	0.696	1.847	0.63	1.97	0.586	2.098	0.504	2.229
29	1.119	1.254	1.054	1.332	0.988	1.418	0.921	1.512	0.855	1.611	0.788	1.718	0.723	1.83	0.658	1.947	0.595	2.068	0.533	2.193
30	1.133	1.263	1.07	1.339	1.006	1.421	0.941	1.511	0.877	1.606	0.812	1.707	0.748	1.814	0.684	1.925	0.622	2.041	0.562	2.16
31	1.147	1.273	1.085	1.345	1.023	1.425	0.96	1.51	0.897	1.601	0.834	1.698	0.764	1.8	0.71	1.906	0.649	2.017	0.589	2.131
32	1.16	1.282	1.1	1.352	1.04	1.428	0.979	1.51	0.917	1.597	0.856	1.69	0.788	1.788	0.734	1.889	0.674	1.995	0.615	2.104
33	1.172	1.291	1.114	1.358	1.055	1.432	0.996	1.51	0.936	1.594	0.876	1.683	0.812	1.776	0.757	1.874	0.698	1.975	0.641	2.08
34	1.184	1.299	1.128	1.364	1.07	1.435	1.012	1.511	0.954	1.591	0.896	1.677	0.834	1.766	0.779	1.86	0.722	1.957	0.665	2.057
35	1.195	1.307	1.14	1.37	1.085	1.439	1.028	1.512	0.971	1.589	0.914	1.671	0.856	1.757	0.8	1.847	0.744	1.94	0.689	2.037
36	1.206	1.315	1.153	1.376	1.098	1.442	1.043	1.513	0.988	1.588	0.932	1.666	0.876	1.749	0.821	1.836	0.766	1.925	0.711	2.018
37	1.217	1.323	1.165	1.382	1.112	1.446	1.058	1.514	1.004	1.586	0.95	1.662	0.896	1.742	0.841	1.825	0.787	1.911	0.733	2.001
38	1.227	1.33	1.176	1.388	1.124	1.449	1.072	1.515	1.019	1.585	0.966	1.658	0.914	1.735	0.86	1.816	0.807	1.899	0.754	1.985
39	1.237	1.337	1.187	1.393	1.137	1.453	1.085	1.517	1.034	1.584	0.982	1.655	0.932	1.729	0.878	1.807	0.826	1.887	0.774	1.97
40	1.246	1.344	1.198	1.398	1.148	1.457	1.098	1.518	1.048	1.584	0.997	1.652	0.946	1.724	0.895	1.799	0.844	1.876	0.749	1.956

TABLE 16 B: DURBIN-WATSON d STATISTICS: SIGNIFICANCE POINTS OF d_L AND d_U AT 0.05 LEVEL OF SIGNIFICANCE

N	k'=1		k'=2		k'=3		k'=4		k'=5		k'=6		k'=7		k'=8		k'=9		k'=10	
	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U	d_L	d_U
6	0.610	1.400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	0.700	1.356	0.467	1.896	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	0.763	1.332	0.559	1.777	0.368	2.287	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	0.724	1.320	0.629	1.699	0.455	2.128	0.296	2.588	-	-	-	-	-	-	-	-	-	-	-	-
10	0.879	1.320	0.697	1.641	0.525	2.016	0.376	1.414	0.243	2.822	-	-	-	-	-	-	-	-	-	-
11	0.927	1.324	0.658	1.604	0.595	1.928	0.444	2.283	0.316	2.645	0.203	3.005	-	-	-	-	-	-	-	-
12	0.971	1.331	0.812	1.579	0.658	1.864	0.512	2.177	0.379	2.506	0.268	2.832	0.171	3.149	-	-	-	-	-	-
13	1.010	1.340	0.861	1.562	0.715	1.816	0.574	1.094	0.445	2.390	0.328	1.692	0.230	2.985	0.147	3.266	-	-	-	-
14	1.045	1.350	0.905	1.551	0.767	1.779	0.632	2.030	0.505	2.296	0.389	1.572	0.286	1.848	0.200	3.111	0.127	3.360	-	-
15	1.077	1.361	0.946	1.543	0.814	1.750	0.685	1.977	0.562	2.220	0.447	2.472	0.343	2.727	0.251	2.979	0.175	3.216	0.111	3.438
16	1.106	1.371	0.982	1.539	0.857	1.728	0.734	1.935	0.615	2.157	0.502	2.388	0.396	2.624	0.304	2.860	1.222	3.090	0.155	3.304
17	1.133	1.381	1.015	1.536	0.897	1.710	0.779	1.900	0.664	2.104	0.554	2.318	0.451	2.537	0.358	2.757	0.272	2.975	1.198	3.184
18	1.158	1.391	1.046	1.535	0.933	1.696	0.820	1.872	0.710	2.060	0.603	2.257	0.502	2.461	0.407	2.667	0.321	2.873	1.244	3.073
19	1.180	1.401	1.074	1.536	0.967	1.685	0.859	1.848	0.752	2.023	0.649	2.206	0.549	2.396	0.456	2.589	0.369	2.783	0.290	2.974
20	1.201	1.411	1.100	1.537	0.998	1.676	0.894	1.828	0.792	1.991	0.692	2.162	0.595	2.339	0.502	2.521	0.416	2.704	0.336	2.885
21	1.221	1.420	1.125	1.538	1.026	1.669	0.927	1.812	0.829	1.964	0.732	2.124	0.637	2.290	0.547	2.460	0.461	2.633	0.380	2.806
22	1.239	1.429	1.147	1.541	1.053	1.664	0.958	1.797	0.863	1.940	0.769	2.090	0.677	2.246	0.588	2.407	0.504	2.571	0.424	2.734
23	1.257	1.437	1.168	1.543	1.078	1.660	0.986	1.785	0.895	1.920	0.804	2.061	0.715	2.208	0.628	2.360	0.545	2.514	0.465	2.670
24	1.273	1.446	1.188	1.546	1.101	1.656	1.013	1.775	0.925	1.902	0.837	2.035	0.751	2.174	0.666	2.318	0.584	2.464	0.506	2.613
25	1.288	1.454	1.206	1.550	1.123	1.654	1.038	1.767	0.953	1.886	0.868	2.012	0.784	2.144	0.702	2.280	0.621	2.419	0.544	2.560
26	1.302	1.461	1.224	1.553	1.143	1.652	1.062	1.759	0.979	1.873	0.897	1.992	0.816	2.117	0.735	2.246	0.657	2.379	0.581	2.513
27	1.316	1.469	1.240	1.556	1.162	1.651	1.084	1.753	1.004	1.861	0.925	1.974	0.845	2.093	0.767	2.216	0.691	2.342	0.616	2.470
28	1.328	1.476	1.255	1.560	1.181	1.650	1.104	1.747	1.028	1.850	0.951	1.958	0.874	2.071	0.798	2.188	0.723	2.309	0.650	2.431
29	1.341	1.483	1.270	1.563	1.198	1.650	1.124	1.743	1.050	1.841	0.975	1.944	0.900	2.052	0.826	2.164	0.753	2.278	0.682	2.396
30	1.352	1.489	1.284	1.567	1.214	1.650	1.143	1.739	1.071	1.833	0.998	1.931	0.926	2.034	0.854	2.141	0.782	2.251	0.712	2.363
31	1.363	1.496	1.297	1.570	1.229	1.650	1.160	1.735	1.090	1.825	1.020	1.920	0.950	2.018	0.879	2.120	0.810	2.226	0.741	2.333
32	1.373	1.502	1.309	1.574	1.244	1.650	1.177	1.732	1.109	1.819	1.041	1.909	0.972	2.004	0.904	2.102	0.836	2.203	0.769	2.306
33	1.383	1.508	1.321	1.577	1.258	1.651	1.193	1.730	1.127	1.813	1.061	1.900	0.994	1.991	0.927	2.085	0.861	2.181	0.795	2.281
34	1.393	1.514	1.333	1.580	1.271	1.652	1.208	1.728	1.144	1.808	1.080	1.891	1.015	1.979	0.950	2.069	0.885	2.162	0.821	2.257
35	1.402	1.519	1.343	1.584	1.283	1.653	1.222	1.726	1.160	1.803	1.097	1.884	1.034	1.967	0.971	2.054	0.908	2.144	0.845	2.236
36	1.411	1.525	1.354	1.587	1.295	1.654	1.236	1.724	1.175	1.799	1.114	1.877	1.053	1.957	0.991	2.041	0.930	2.127	0.868	2.216
37	1.419	1.530	1.364	1.590	1.307	1.655	1.249	1.723	1.190	1.795	1.131	1.870	1.071	1.948	1.011	2.029	0.951	2.112	0.891	2.198
38	1.427	1.535	1.373	1.594	1.318	1.656	1.261	1.722	1.204	1.792	1.146	1.864	1.088	1.939	1.029	2.017	0.970	2.098	0.912	2.180
39	1.435	1.540	1.382	1.597	1.328	1.658	1.273	1.722	1.218	1.789	1.161	1.859	1.104	1.932	1.047	2.007	0.990	2.085	0.932	2.164
40	1.442	1.544	1.391	1.600	1.338	1.659	1.285	1.721	1.230	1.786	1.175	1.854	1.120	1.924	1.064	1.997	1.008	2.072	0.952	2.149

