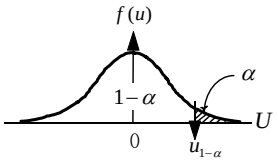
〔 부록 : 통계 분포표 〕

<부표 1> 정규분포표 (1)

표준화 정규분포표의 확률변수 U 가 $u_{1-\alpha}$ 값 이상이 될 상측 한쪽확률 α 를 구하는 표

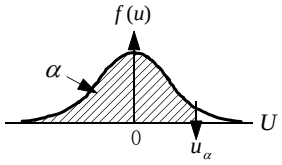


u	*=0	*=1	*=2	*=3	*=4	*=5	*=6	*=7	*=8	*=9
0.0*	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641
0.1*	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
0.2*	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
0.3*	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
0.4*	.3466	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
0.5*	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
0.6*	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2461
0.7*	.2402	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
0.8*	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
0.9*	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
1.0*	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
1.1*	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
1.2*	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
1.3*	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
1.4*	.0808	.0793	.0078	.0764	.0749	.0735	.0721	.0708	.0694	.0681
1.5*	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
1.6*	.0548	.0537	.0526	.0516	**.0505**	**.0495**	.0485	.0475	.0465	.0455
1.7*	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
1.8*	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
1.9*	.0287	.0281	.0274	.0268	.0262	.0256	**.0250**	.0244	.0239	.0233
2.0*	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
2.1*	.0179	.0174	.0170	.0116	.0162	.0158	.0154	.0150	.0146	.0143
2.2*	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
2.3*	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
2.4*	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
2.5*	.0062	.0060	.0059	.0057	.0055	.0054	.0052	**.0051**	**.0049**	.0048
2.6*	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
2.7*	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
2.8*	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
2.9*	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
3.0*	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010

【주】 u =1.96에 대한 α 는 좌측의 수 1.9에서 우측으로 가서 위의 숫자 6에서 밑으로 내려온 곳에 있는 수를 읽어 α =0.0250을 얻을 수 있다.

<부표 2> 정규분포표 (2)

표준화 정규분포표의 확률변수 U 가 u_α 값 이하가 될 확률 α 를 구하는 표

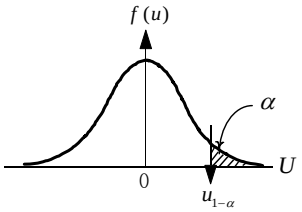


u	*=0	*=1	*=2	*=3	*=4	*=5	*=6	*=7	*=8	*=9
0.0*	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1*	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2*	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6044	.6103	.6141
0.3*	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4*	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5*	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6*	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7*	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8*	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9*	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0*	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1*	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2*	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3*	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4*	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5*	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6*	.9452	.9463	.9474	.9484	**.9495**	**.9505**	.9515	.9525	.9535	.9545
1.7*	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8*	.9641	.9649	.9636	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9*	.9713	.9719	.9726	.9732	.9738	.9744	**.9750**	.9756	.9761	.9767
2.0*	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1*	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2*	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3*	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4*	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5*	.9938	.9940	.9941	.9943	.9945	.9946	.9948	**.9949**	**.9951**	.9952
2.6*	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7*	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8*	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9*	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0*	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1*	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2*	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3*	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4*	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

【주】 u =1.96에 대한 α 는 좌측의 수 1.9에서 우측으로 가서 위의 숫자 6에서 밑으로 내려온 곳에 있는 수를 읽어 빗금면적의 확률 α =0.9750을 얻을 수 있다.

<부표 3> 정규분포표 (3)

α 에서 상측 분위점 $u_{1-\alpha}$ 를 구하는 표

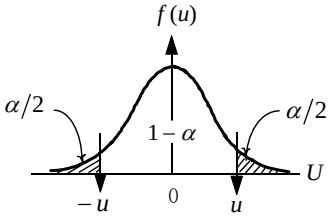


α	*=0	*=1	*=2	*=3	*=4	*=5	*=6	*=7	*=8	*=9
0.000*	∞	3.090	2.878	2.748	2.652	**2.576**	2.512	2.457	2.409	2.366
0.0*	∞	2.326	**2.054**	**1.881**	1.751	**1.645**	1.555	1.476	1.405	1.341
0.1*	1.282	1.227	1.175	1.126	1.080	1.036	0.994	0.954	0.915	0.878
0.2*	0.842	0.806	0.772	0.739	0.706	0.674	0.643	0.613	0.583	0.553
0.3*	0.524	0.496	0.468	0.440	0.412	0.385	0.358	0.332	0.305	0.279
0.4*	0.253	0.228	0.202	0.176	0.151	0.126	0.100	0.075	0.050	0.025

비고 : Z를 K_ε으로, $P(Z \geq z)$를 ε으로 나타내기도 함.

<부표 4> 정규분포표 (4)

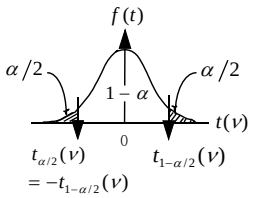
한쪽·양쪽 확률 겸용표



u	α	$\alpha/2$	u	α	$\alpha/2$
1	0.3173	0.15866	**1.6449**	**0.10**	**0.05**
2	0.0455	0.02275	**1.9600**	**0.05**	**0.025**
3	0.0027	0.00135	2.3263	0.02	0.010
0.6745	0.50	0.25	**2.5758**	**0.01**	**0.005**
1.2816	0.20	0.10	3.0902	0.002	0.001

<부표 5> t 분포표 (1)

자유도 ν와 양쪽확률 α에서
$t_{\alpha/2}(\nu)$와 $t_{1-\alpha/2}(\nu)$를 구하는 표

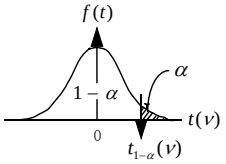


ν \ α	**0.50**	0.40	0.30	0.20	**0.10**	0.05	0.02	**0.01**	0.001	α / ν
1	1.000	1.376	1.963	3.078	6.314	12.706	31.281	63.657	636.619	1
2	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	31.598	2
3	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	12.941	3
4	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	8.610	4
5	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	6.859	5
6	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.959	6
7	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	5.405	7
8	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	5.041	8
9	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.781	9
10	0.700	0.879	1.093	1.372	1.812	**2.228**	2.764	3.169	4.587	10
11	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.437	11
12	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	4.318	12
13	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	4.221	13
14	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	4.140	14
15	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	4.073	15
16	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	4.015	16
17	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.965	17
18	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.922	18
19	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.883	19
20	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.850	20
21	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.819	21
22	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.792	22
23	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.767	23
24	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.745	24
25	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.725	25
26	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.707	26
27	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.690	27
28	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.674	28
29	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.659	29
30	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.646	30
40	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.551	40
60	0.679	0.848	1.046	1.296	1.671	2.000	2.390	2.660	3.460	60
120	0.677	0.845	1.041	1.289	1.658	1.980	2.358	2.617	3.373	120
∞	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.291	∞

【주】 $\nu = 10$, 양쪽확률 α =0.05에 대한 t의 값은 $+t_{0.025}(10) = +2.228$, $-t_{0.025}(10) = -2.228$이다.
이는 자유도 10의 t분포에 따르는 확률변수가 2.228이상의 절대치를 가지고 출현하는 확률이 5%라는 것을 가리킨다.

<부표 6> t 분포표 (2)

자유도 ν와 상측 한쪽확률 α에서
$t_{1-\alpha}(\nu)$를 구하는 표

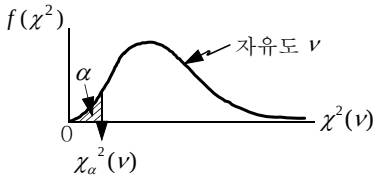


ν \ $1-\alpha$	**0.75**	0.80	0.85	0.90	0.95	**0.975**	0.99	**0.995**	0.9995	ν \ $1-\alpha$
1	1.000	1.376	1.963	3.078	6.314	12.706	31.281	63.657	636.619	1
2	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	31.598	2
3	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	12.941	3
4	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	8.610	4
5	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	6.859	5
6	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.959	6
7	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	5.405	7
8	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	5.041	8
9	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.781	9
10	0.700	0.879	1.093	1.372	1.812	**2.228**	2.764	3.169	4.587	10
11	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.437	11
12	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	4.318	12
13	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	4.221	13
14	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	4.140	14
15	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	4.073	15
16	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	4.015	16
17	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.965	17
18	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.922	18
19	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.883	19
20	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.850	20
21	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.819	21
22	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.792	22
23	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.767	23
24	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.745	24
25	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.725	25
26	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.707	26
27	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.690	27
28	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.674	28
29	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.659	29
30	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.646	30
40	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.551	40
60	0.679	0.848	1.046	1.296	1.671	2.000	2.390	2.660	3.460	60
120	0.677	0.845	1.041	1.289	1.658	1.980	2.358	2.617	3.373	120
∞	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.291	∞

【주】 $\nu = 10$, 상측 한쪽확률 α =0.05에 대한 t 의 값은 $t_{1-\alpha}(\nu) = t_{1-0.05}(10) = t_{0.95}(10) = 2.228$ 이다.
이는 자유도 10의 t 분포에 따르는 확률변수가 2.228이하의 절대치를 가지고 출현하는 확률이 97.5%라는 것을 가리킨다..

<부표 7> χ^2분포표

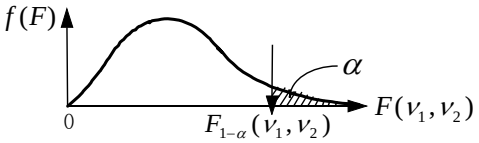
자유도 ν와 하측확률 α에서
$\chi_\alpha^2(\nu)$를 구하는 표



ν \ α	0.005	0.010	0.025	0.050	0.100	0.250	0.500	0.750	0.900	0.950	0.975	0.990	0.995
1	$0.0^4 4$	$0.0^3 2$	$0.0^2 1$	$0.0^3 3$	0.02	0.10	0.46	1.32	2.71	3.84	5.02	6.63	7.88
2	0.01	0.02	0.05	0.10	0.21	0.58	1.39	2.77	4.61	5.99	7.38	9.21	10.60
3	0.07	0.12	0.22	0.35	0.58	1.21	2.37	4.11	6.25	7.81	9.35	11.34	12.84
4	0.21	0.30	0.48	0.71	1.06	1.92	3.36	5.39	7.78	9.49	11.14	13.28	14.86
5	0.41	0.55	0.83	1.15	1.61	2.67	4.35	6.63	9.24	11.07	12.83	15.09	16.75
6	0.68	0.87	1.24	1.64	2.20	3.45	5.35	7.84	10.64	12.59	14.45	16.81	18.55
7	0.99	1.24	1.69	2.17	2.83	4.25	6.35	9.04	12.02	14.07	16.01	18.48	20.3
8	1.34	1.65	2.18	2.73	3.49	5.07	7.34	10.22	13.36	15.51	17.54	20.1	22.0
9	1.74	2.09	2.70	3.33	4.17	5.90	8.34	11.39	14.68	16.92	19.02	21.7	23.6
10	2.16	2.56	3.25	3.94	4.87	6.74	9.34	12.55	15.99	18.31	20.5	23.2	25.2
11	2.60	3.05	3.82	4.57	5.58	7.58	10.34	13.70	17.28	19.68	21.9	24.7	26.8
12	3.07	3.57	4.40	5.23	6.30	8.44	11.34	14.85	18.55	21.0	23.3	26.2	28.3
13	3.57	4.11	5.01	5.89	7.04	9.30	12.34	15.98	19.81	22.4	24.7	27.7	29.8
14	4.07	4.66	5.63	6.57	7.79	10.17	13.34	17.12	21.1	23.7	26.1	29.1	31.3
15	4.60	5.23	6.26	7.26	8.55	11.04	14.34	18.25	22.3	25.0	27.5	30.6	32.8
16	5.14	5.81	6.91	7.96	9.31	11.91	15.34	19.37	23.5	26.3	28.8	32.0	34.3
17	5.70	6.41	7.56	8.67	10.09	12.79	16.34	20.5	24.8	27.6	30.2	33.4	35.7
18	6.26	7.01	8.23	9.39	10.86	13.68	17.34	21.6	26.0	28.9	31.5	34.8	37.2
19	6.84	7.63	8.91	10.12	11.65	14.56	18.34	22.7	27.2	30.1	32.9	36.2	38.6
20	7.43	8.26	9.59	10.85	12.44	15.45	19.34	23.8	28.4	31.4	34.2	37.6	40.0
21	8.03	8.90	10.28	11.59	13.24	16.34	20.3	24.9	29.6	32.7	35.5	38.9	41.4
22	8.64	9.54	10.98	12.34	14.04	17.24	21.3	26.0	30.8	33.9	36.8	40.3	42.8
23	9.26	10.20	11.69	13.09	14.85	18.14	22.3	27.1	32.0	35.2	38.1	41.6	44.2
24	9.89	10.86	12.40	13.85	15.66	19.04	23.3	28.2	33.2	36.4	39.4	43.0	45.6
25	10.52	11.52	13.12	14.61	14.67	19.94	24.3	29.3	34.4	37.7	40.6	44.3	46.9
26	11.46	12.20	13.84	15.38	17.29	20.8	25.3	30.4	35.6	38.9	41.9	45.6	48.3
27	11.81	12.88	14.57	16.15	18.11	21.7	26.3	31.5	36.7	40.1	43.2	47.0	49.6
28	12.46	13.56	15.31	16.93	18.94	22.7	27.3	32.6	37.9	41.3	44.5	48.3	51.0
29	13.12	14.26	16.05	17.71	19.77	23.6	28.3	33.7	39.1	42.6	45.7	49.6	52.3
30	13.79	14.95	16.79	18.49	20.6	24.5	29.3	34.8	40.3	43.8	47.0	50.9	53.7
40	20.7	22.2	24.4	26.5	29.1	33.7	39.3	45.6	51.8	55.8	59.3	63.7	66.8
50	28.0	29.7	32.4	34.8	37.7	42.9	49.3	56.3	63.2	67.5	71.4	76.2	79.5
60	35.5	37.5	40.5	43.2	46.5	52.3	59.3	67.0	74.4	79.1	83.3	88.4	92.0
70	43.3	45.4	48.8	51.7	55.3	61.7	69.3	77.6	85.5	90.5	95.0	100.4	104.2
80	51.2	53.5	57.2	60.4	64.3	71.1	79.3	88.1	96.6	101.9	106.6	112.3	116.3
90	59.2	61.8	65.6	69.1	73.3	80.6	89.3	98.6	107.6	113.1	118.1	124.1	128.3
100	67.3	70.1	74.2	77.9	82.4	90.1	99.3	109.1	118.5	124.3	129.6	135.8	140.2

<부표 8> F 분포표 (상측확률 10%)

자유도 ν_1, ν_2 에서 상측확률 α =0.10(10%)에 대한 $F_{0.90}(\nu_1, \nu_2)$ 값을 구하는 표



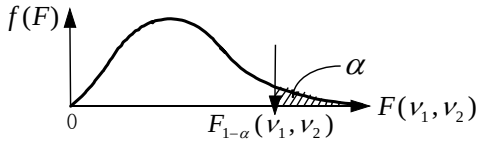
ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	12	15	20	30	40	60	120	∞
1	39.9	49.5	53.6	55.8	57.2	58.2	58.9	59.4	59.9	60.2	60.7	61.2	61.7	62.3	62.5	62.8	63.1	63.3
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.41	9.42	9.44	9.46	9.47	9.47	9.48	9.49
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.22	5.20	5.18	5.17	5.16	5.15	5.14	5.13
4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92	3.90	3.87	3.84	3.82	3.80	3.79	3.78	3.76
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	**3.30**	3.27	3.24	3.21	3.17	3.16	3.14	3.12	3.10
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.90	2.87	2.84	2.80	2.78	2.76	2.74	2.72
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.67	2.63	2.59	2.56	2.54	2.51	2.49	2.47
8	3.46	3.11	2.92	2.81	2.73	2.66	2.62	2.59	2.56	2.54	2.50	2.46	2.42	2.38	2.36	2.34	2.32	2.29
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.38	2.34	2.30	2.25	2.23	2.21	2.18	2.16
10	3.28	2.92	2.73	2.61	**2.52**	2.46	2.41	2.38	2.35	2.32	2.28	2.24	2.20	2.16	2.13	2.11	2.08	2.06
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25	2.21	2.17	2.12	2.08	2.05	2.03	2.00	1.97
12	3.13	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.15	2.10	2.06	2.01	1.99	1.96	1.93	1.90
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14	2.10	2.05	2.01	1.96	1.93	1.90	1.88	1.85
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10	2.05	2.01	1.96	1.91	1.89	1.86	1.83	1.80
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	2.02	1.97	1.92	1.87	1.85	1.82	1.79	1.76
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03	1.99	1.94	1.89	1.84	1.81	1.78	1.75	1.72
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00	1.96	1.91	1.86	1.81	1.78	1.75	1.72	1.67
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98	1.93	1.89	1.84	1.78	1.75	1.72	1.69	1.66
19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98	1.96	1.91	1.86	1.81	1.76	1.73	1.70	1.67	1.63
20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.89	1.84	1.79	1.74	1.71	1.68	1.64	1.61
21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95	1.92	1.88	1.83	1.78	1.72	1.69	1.66	1.62	1.59
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90	1.86	1.81	1.76	1.70	1.67	1.64	1.60	1.57
23	2.94	2.55	2.34	2.21	2.11	2.05	1.99	1.95	1.92	1.89	1.84	1.80	1.74	1.69	1.66	1.62	1.59	1.55
24	2.93	2.54	2.33	2.19	2.10	2.04	1.98	1.94	1.91	1.88	1.83	1.78	1.73	1.67	1.64	1.61	1.57	1.53
25	2.92	2.53	2.32	.18	2.09	2.02	1.97	1.93	1.89	1.87	1.82	1.77	1.72	1.66	1.63	1.59	1.56	1.52
26	2.91	2.52	2.31	2.17	2.08	2.01	1.96	1.92	1.88	1.86	1.81	1.76	1.71	1.65	1.61	1.58	1.54	1.50
27	2.90	2.51	2.30	2.17	2.07	2.00	1.95	1.91	1.87	1.85	1.80	1.75	1.70	1.64	1.60	1.57	1.53	1.49
28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87	1.84	1.79	1.74	1.69	1.63	1.59	1.56	1.52	1.48
29	2.89	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86	1.83	1.78	1.73	1.68	1.62	1.58	1.55	1.51	1.47
30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82	1.77	1.72	1.67	1.61	1.57	1.54	1.50	1.46
40	2.84	2.44	2.33	2.09	2.00	1.93	1.87	1.83	1.79	1.76	1.71	1.66	1.61	1.54	1.51	1.46	1.42	1.38
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.66	1.60	1.54	1.48	1.44	1.40	1.35	1.29
120	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68	1.65	1.60	1.54	1.48	1.41	1.37	1.32	1.26	1.19
∞	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63	1.60	1.55	1.49	1.42	1.34	1.30	1.24	1.17	1.00

【주】 자유도 $\nu_1 = 5,\ \nu_2 = 10$ 인 F 분포의 상측확률 10%의 점은 $F_{0.90}(5,\ 10) = 2.52$, 하측확률 10%의 점은 $F_{0.10}(5,\ 10) = 1/F_{0.90}(10,\ 5) = 1/3.30 = 0.30$

<부표 9> F 분포표 (상측확률 5%)

자유도 ν_1, ν_2 에서 상측확률 α =0.05(5%)에 대한

$F_{0.95}(\nu_1, \nu_2)$ 값을 구하는 표



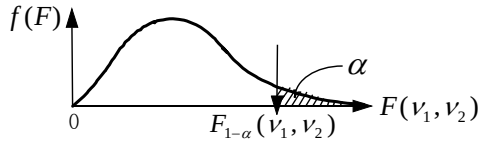
ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	12	15	20	30	40	60	120	∞
1	161	200	216	225	230	234	237	239	241	242	244	246	248	250	251	252	253	254
2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5
3	10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	**4.74**	4.68	4.62	4.56	4.50	4.46	4.43	4.40	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	**3.33**	3.22	3.14	3.07	3.02	2.98	2.91	2.84	2.77	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.79	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.87	1.82	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.85	1.81	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.46	1.39	1.32	1.22	1.00

【주】 자유도 $\nu_1 = 5,\ \nu_2 = 10$ 인 F 분포의 상측확률 5%의 점은 $F_{0.95}(5,\ 10) = 3.33$, 하측확률 5%의 점은 $F_{0.95}(5,\ 10) = 1 / F_{0.95}(10,\ 5) = 1 / 4.74 = 0.21$

<부표 10> F 분포표 (상측확률 2.5%)

자유도 ν_1, ν_2 에서 상측확률 α =0.025(2.5%)에 대한

$F_{0.95}(\nu_1,\nu_2)$ 값을 구하는 표

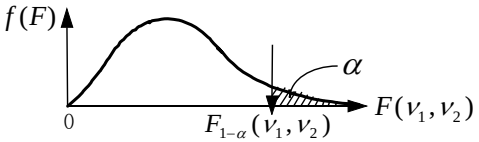


ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	12	15	20	30	40	60	120	∞
1	648	800	864	900	922	937	948	957	963	969	977	985	993	1001	1006	1010	1014	1018
2	38.5	39.0	39.2	39.2	39.3	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.5	39.5	39.5	39.5	39.5
3	17.4	16.0	15.4	15.1	14.9	14.6	14.6	14.5	14.5	14.4	14.3	14.3	14.2	14.1	14.0	14.0	13.9	13.9
4	12.2	10.6	9.98	9.60	9.36	9.07	9.07	8.98	8.90	8.84	8.75	8.66	8.56	8.46	8.41	8.36	8.31	8.26
5	10.0	8.43	7.76	7.39	7.15	6.85	6.85	6.76	6.68	**6.62**	6.52	6.43	6.33	6.23	6.18	6.12	6.07	6.02
6	8.81	7.26	6.60	6.23	5.99	5.70	5.70	5.60	5.52	5.46	5.37	5.27	5.17	5.07	5.01	4.96	4.90	4.85
7	8.07	6.54	5.89	5.62	5.29	4.99	4.99	4.90	4.82	4.76	4.67	4.57	4.47	4.36	4.31	4.25	4.20	4.14
8	7.57	6.06	5.42	5.05	4.82	4.53	4.53	4.43	4.36	4.30	4.20	4.10	4.00	3.89	3.84	3.78	3.73	3.67
9	7.21	5.71	5.08	4.72	4.48	4.20	4.20	4.10	4.03	3.96	3.87	3.77	3.67	3.56	3.51	3.45	3.39	3.33
10	6.94	5.46	4.83	4.47	**4.24**	3.95	3.95	3.85	3.78	3.72	3.62	3.52	3.42	3.31	3.26	3.20	3.14	3.08
11	6.72	5.26	4.63	4.28	4.04	3.76	3.76	3.66	3.59	3.53	3.43	3.33	3.23	3.12	3.06	3.00	2.94	2.88
12	6.55	5.10	4.47	4.12	3.89	3.61	3.61	3.51	3.44	3.37	3.28	3.18	3.07	2.96	2.91	2.85	2.79	2.72
13	6.41	4.97	4.35	4.00	3.77	3.48	3.48	3.39	3.31	3.25	3.15	3.05	2.95	2.84	2.78	2.72	2.66	2.60
14	6.30	4.86	4.24	3.89	3.66	3.38	3.38	3.29	3.21	3.15	3.05	2.95	2.84	2.73	2.67	2.61	2.55	2.49
15	6.20	4.76	4.15	3.80	3.58	3.29	3.29	3.20	3.12	3.06	2.96	2.86	2.76	2.64	2.58	2.52	2.46	2.40
16	6.12	4.69	4.08	3.73	3.50	3.22	3.22	3.12	3.05	2.99	2.89	2.79	2.68	2.57	2.51	2.45	2.38	2.32
17	6.04	4.62	4.01	3.66	3.44	3.16	3.16	3.06	2.98	2.92	2.82	2.72	2.62	2.50	2.44	2.38	2.32	2.25
18	5.98	4.56	3.95	3.61	3.38	3.10	3.10	3.01	2.93	2.87	2.77	2.67	2.56	2.44	2.38	2.32	2.26	2.19
19	5.92	4.51	3.90	3.56	3.33	3.05	3.05	2.96	2.88	2.82	2.72	2.62	2.51	2.39	2.33	2.27	2.20	2.13
20	5.87	4.46	3.86	3.51	3.29	3.01	3.01	2.91	2.84	2.77	2.68	2.57	2.46	2.35	2.29	2.22	2.16	2.09
21	5.83	4.42	3.82	3.48	3.25	2.97	2.97	2.87	2.80	2.73	2.64	2.53	2.42	2.31	2.25	2.18	2.11	2.04
22	5.79	4.38	3.78	3.44	3.22	2.93	2.93	2.84	2.76	2.70	2.60	2.50	2.39	2.27	2.21	2.14	2.08	2.00
23	5.75	4.35	3.75	3.41	3.18	2.90	2.90	2.81	2.73	2.67	2.57	2.47	2.36	2.24	2.18	2.11	2.04	1.97
24	5.72	4.32	3.72	3.38	3.15	2.87	2.87	2.78	2.70	2.64	2.54	2.44	2.33	2.21	2.15	2.08	2.01	1.94
25	5.69	4.29	3.69	3.35	3.13	2.85	2.85	2.75	2.68	2.61	2.51	2.41	2.30	2.18	2.12	2.05	1.98	1.91
26	5.66	4.27	3.67	3.33	3.10	2.82	2.82	2.73	2.65	2.59	2.49	2.39	2.28	2.16	2.09	2.03	1.95	1.88
27	5.63	4.24	3.65	3.31	3.08	2.80	2.80	2.71	2.63	2.57	2.47	2.36	2.25	2.13	2.07	2.00	1.93	1.85
28	5.61	4.22	3.63	3.29	3.06	2.78	2.78	2.69	2.61	2.55	2.45	2.34	2.23	2.11	2.05	1.98	1.91	1.83
29	5.59	4.20	3.61	3.27	3.04	2.76	2.76	2.67	2.59	2.53	2.43	2.32	2.21	2.09	2.03	1.96	1.89	1.81
30	5.57	4.18	3.59	3.25	3.03	2.75	2.75	2.65	2.57	2.51	2.41	2.31	2.20	2.07	2.01	1.94	1.87	1.79
40	5.42	4.05	3.46	3.13	2.90	2.62	2.62	2.53	2.45	2.39	2.29	2.18	2.07	1.94	1.88	1.80	1.72	1.64
60	5.29	3.93	3.34	3.01	2.79	2.51	2.51	2.41	2.33	2.27	2.17	2.06	1.94	1.82	1.74	1.67	1.58	1.48
120	5.15	3.80	3.23	2.89	2.67	2.39	2.39	2.30	2.22	2.16	2.05	1.94	1.82	1.69	1.61	1.53	1.43	1.31
∞	5.02	3.69	3.12	2.79	2.57	2.29	2.29	2.19	2.11	2.05	1.94	1.83	1.71	1.57	1.48	1.39	1.27	1.00

【주】 자유도 $\nu_1=5,\ \nu_2=10$인 F 분포의 상측확률 2.5%의 점은 $F_{0.975}(5,\ 10)=4.24$, 하측확률 2.5%의 점은 $F_{0.025}(5,\ 10)=1/F_{0.975}(10,\ 5)=1/6.62=0.15$

<부표 11> F 분포표 (상측확률 1%)

자유도 ν_1, ν_2 에서 상측확률 α =0.01(1%)에 대한 $F_{0.99}(\nu_1, \nu_2)$ 값을 구하는 표

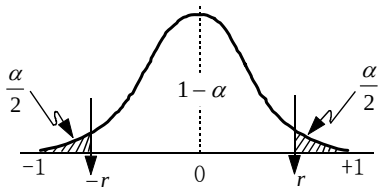


ν_2 \ ν_1	1	2	3	4	5	6	7	8	9	10	12	15	20	30	40	60	120	∞
1	4,052	5,000	5,403	5,625	5,764	5,859	5,928	5,982	6,022	6,056	6106	6157	6209	6261	6287	6313	6339	6366
2	98.5	99.0	99.2	99.2	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.5
3	34.1	30.8	29.5	28.7	28.2	27.9	27.7	27.5	27.3	27.2	27.1	26.9	26.7	26.5	26.4	26.3	26.2	26.1
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	13.8	13.7	13.7	13.6	13.5
5	16.3	13.3	12.1	11.4	11.0	10.7	10.5	10.3	10.2	**10.1**	9.89	9.72	9.55	9.38	9.29	9.20	9.11	9.02
6	13.7	10.9	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.72	7.56	7.40	7.23	7.14	7.06	6.97	6.88
7	12.2	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.47	6.31	6.16	5.99	5.91	5.82	5.74	5.65
8	11.3	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.67	5.52	5.36	5.20	5.12	5.03	4.95	4.86
9	10.6	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.11	4.96	4.81	4.65	4.57	4.48	4.40	4.31
10	10.0	7.56	6.55	5.99	**5.64**	5.39	5.20	5.06	4.94	4.85	4.71	4.56	4.41	4.25	4.17	4.08	4.00	3.91
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54	4.40	4.25	4.10	3.94	3.86	3.78	3.69	3.60
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.16	4.01	3.86	3.70	3.62	3.54	3.45	3.36
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10	3.96	3.82	3.66	3.51	3.43	3.34	3.25	3.17
14	8.86	6.51	5.56	5.04	4.70	4.46	4.28	4.14	4.03	3.94	3.80	3.66	3.51	3.35	3.27	3.18	3.09	3.00
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.67	3.52	3.37	3.21	3.13	3.05	2.96	2.87
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69	3.55	3.41	3.26	3.10	3.02	2.93	2.84	2.75
17	8.40	6.11	5.18	4.67	4.34	4.10	3.93	3.79	3.68	3.59	3.46	3.31	3.16	3.00	2.92	2.83	2.75	2.65
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51	3.37	3.23	3.08	2.92	2.84	2.75	2.66	2.57
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43	3.30	3.15	3.00	2.84	2.76	2.67	2.58	2.49
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.23	3.09	2.94	2.78	2.69	2.61	2.52	2.42
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31	3.17	3.03	2.88	2.72	2.64	2.55	2.46	2.36
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26	3.12	2.98	2.83	2.67	2.58	2.50	2.40	2.31
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21	3.07	2.93	2.78	2.62	2.54	2.45	2.35	2.26
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17	3.03	2.89	2.74	2.58	2.49	2.40	2.31	2.21
25	7.77	5.57	4.68	4.18	3.86	3.63	3.46	3.32	3.22	3.13	2.99	2.85	2.70	2.54	2.45	2.36	2.27	2.17
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.23	3.18	3.09	2.96	2.82	2.66	2.50	2.42	2.33	2.23	2.13
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06	2.93	2.78	2.63	2.47	2.38	2.29	2.20	2.10
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03	2.90	2.75	2.60	2.44	2.35	2.26	2.17	2.06
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00	2.87	2.73	2.57	2.41	2.33	2.23	2.14	2.03
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.84	2.70	2.55	2.39	2.30	2.21	2.11	2.01
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.66	2.52	2.37	2.20	2.11	2.02	1.92	1.80
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.50	2.35	2.20	2.03	1.94	1.84	1.73	1.60
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47	2.34	2.19	2.03	1.86	1.76	1.66	1.53	1.38
∞	6.63	4.61	3.79	3.32	3.02	2.80	2.64	2.51	2.41	2.32	2.18	2.04	1.88	1.70	1.59	1.47	1.32	1.00

【주】 자유도 $\nu_1 = 5,\ \nu_2 = 10$ 인 F 분포의 상측확률 1%의 점은 $F_{0.99}(5,\ 10) = 5.64$, 하측확률 1%의 점은 $F_{0.01}(5,\ 10) = 1 / F_{0.99}(10,\ 5) = 1 / 10.1 = 0.01$

<부표 12> r 분포표

(자유도 ν에서 r 분포의 양측확률 α 인 점의 값)



ν \ α	0.10	0.05	0.02	0.01
10	0.4793	0.5760	0.6581	0.7079
11	0.4762	0.5529	0.6339	0.6835
12	0.4575	0.5324	0.6120	0.6614
13	0.4409	0.5139	0.5923	0.6411
14	0.4259	0.4973	0.5742	0.6226
15	0.4124	0.4821	0.5577	0.6055
16	0.4000	0.4683	0.5425	0.5897
17	0.3887	0.4555	0.5285	0.5751
18	0.3783	0.4438	0.5155	0.5614
19	0.3687	0.4329	0.5034	0.5847
20	0.3598	0.4227	0.4921	0.5368
25	0.3233	0.3089	0.4451	0.4869
30	0.2960	0.3494	0.4093	0.4487
35	0.2746	0.3246	0.3810	0.4182
40	0.2573	0.3034	0.3578	0.3932
50	0.2306	0.2732	0.3218	0.3541
60	0.2108	0.2500	0.2948	0.3248
70	0.1.954	0.2319	0.2737	0.3017
80	0.1829	0.2172	0.2565	0.2830
90	0.1726	0.2050	0.2422	0.2673
100	0.1638	0.1946	0.2301	0.2540
근사식	$\frac{1.645}{\sqrt{\nu+1}}$	$\frac{1.960}{\sqrt{\nu+1}}$	$\frac{2.326}{\sqrt{\nu+2}}$	$\frac{2.576}{\sqrt{\nu+3}}$

<부표 13> 슈하트 관리도용 계수표 (1)

군의 크기	관리 한계를 위한 계수											중심선을 위한 계수			
	A	A_2	A_3	B_3	B_4	B_5	B_6	D_1	D_2	D_3	D_4	c_4	$1/c_4$	d_2	$1/d_2$
2	2.121	1.880	2.659	-	3.267	-	2.606	-	3.686	-	3.267	0.7979	1.2533	1.128	0.8865
3	1.732	1.023	1.954	-	2.568	-	2.276	-	4.358	-	2.574	0.8862	1.1284	1.693	0.5907
4	1.500	0.729	1.628	-	2.266	-	2.088	-	4.698	-	2.282	0.9213	1.0854	2.059	0.4857
5	1.342	0.577	1.427	-	2.089	-	1.964	-	4.918	-	2.114	0.9400	1.0638	2.326	0.4299
6	1.225	0.483	1.287	0.030	1.970	0.029	1.874	-	5.078	-	2.004	0.9515	1.0510	2.534	0.3946
7	1.134	0.419	1.182	0.118	1.882	0.113	1.806	0.204	5.204	0.076	1.924	0.9594	1.0423	2.704	0.3698
8	1.061	0.373	1.099	0.185	1.815	0.179	1.751	0.388	5.306	0.136	1.864	0.9650	1.0363	2.847	0.3512
9	1.000	0.337	1.032	0.239	1.761	0.232	1.707	0.547	5.393	0.184	1.816	0.9693	1.0317	2.970	0.3367
10	0.949	0.308	0.975	0.284	1.716	0.276	1.669	0.687	5.469	0.223	1.777	0.9727	1.0281	3.078	0.3249
11	0.905	0.285	0.927	0.321	1.679	0.313	1.637	0.811	5.535	0.256	1.744	0.9754	1.0252	3.173	0.3152
12	0.866	0.266	0.886	0.354	1.646	0.346	1.610	0.922	5.594	0.283	1.717	0.9776	1.0229	3.258	0.3069
13	0.832	0.249	0.850	0.382	1.618	0.374	1.585	1.025	5.647	0.307	1.693	0.9794	1.0210	3.336	0.2998
14	0.802	0.235	0.817	0.406	1.594	0.399	1.563	1.118	5.696	0.328	1.672	0.9810	1.0194	3.407	0.2935
15	0.775	0.223	0.789	0.428	1.572	0.421	1.544	1.203	5.741	0.347	1.653	0.9823	1.0180	3.472	0.2880
16	0.750	0.212	0.763	0.448	1.552	0.440	1.526	1.282	5.782	0.363	1.637	0.9835	1.0168	3.532	0.2831
17	0.728	0.203	0.739	0.466	1.534	0.458	1.511	1.356	5.820	0.378	1.622	0.9845	1.0157	3.588	0.2787
18	0.707	0.194	0.718	0.482	1.518	0.475	1.496	1.424	5.856	0.391	1.608	0.9854	1.0148	3.640	0.2747
19	0.688	0.187	0.698	0.497	1.503	0.490	1.483	1.487	5.891	0.403	1.597	0.9862	1.0140	3.689	0.2711
20	0.671	0.180	0.680	0.510	1.490	0.504	1.470	1.549	5.921	0.415	1.585	0.9869	1.0133	3.735	0.2677
21	0.655	0.173	0.663	0.523	1.477	0.516	1.459	1.605	5.951	0.425	1.575	0.9876	1.0126	3.778	0.2647
22	0.640	0.167	0.647	0.534	1.466	0.528	1.448	1.659	5.979	0.434	1.566	0.9882	1.0119	3.819	0.2618
23	0.626	0.162	0.633	0.545	1.455	0.539	1.438	1.710	6.006	0.443	1.557	0.9887	1.0114	3.858	0.2592
24	0.612	0.157	0.619	0.555	1.445	0.549	1.429	1.759	6.031	0.451	1.548	0.9892	1.0109	3.895	0.2567
25	0.600	0.153	0.606	0.565	1.435	0.559	1.420	1.806	6.056	0.459	1.541	0.9896	1.0105	3.931	0.2544

출전 : ASTM, philadelphia, PA, USA

<부표 14> 슈하트 관리도용 계수표 (2)

n	2	3	4	5	6	7	8	9	10	∞
A_4	1.88	1.19	0.80	0.69	0.55	0.51	0.43	0.41	0.36	
A_9	2.695	1.826	1.522	1.363	1.263	1.194	1.143	1.104	1.072	
m_3	1.000	1.160	1.092	1.198	1.135	1.214	1.160	1.223	1.176	1.253
d_3	0.853	0.888	0.880	0.864	0.848	0.833	0.820	0.808	0.797	
c_5	0.6028	0.4633	0.3888	0.3412	0.3075	0.2822	0.2621	0.2458	0.2322	

<부표 15> 범위(R)을 사용하는 검정 보조표

(보통체는 v, 고딕체는 c를 나타낸다)

n \ k	1	2	3	4	5	10	15	20	25	30	$k>5$
2	1.0 **1.41**	1.9 **1.28**	2.8 **1.23**	3.7 **1.21**	4.6 **1.19**	9.0 **1.16**	13.4 **1.15**	17.8 **1.14**	22.2 **1.14**	26.5 **1.14**	$0.876k + 0.25$ **$1.128 + 0.32/k$**
3	2.0 **1.91**	3.8 **1.81**	5.7 **1.77**	7.5 **1.75**	9.3 **1.74**	18.4 **1.72**	27.5 **1.71**	36.6 **1.70**	45.6 **1.70**	54.7 **1.70**	$1.185k + 0.25$ **$1.693 + 0.23/k$**
4	2.9 **2.24**	5.7 **2.15**	8.4 **2.12**	11.2 **2.11**	13.9 **2.10**	27.6 **2.08**	41.3 **2.07**	55.0 **2.06**	68.7 **2.06**	82.4 **2.06**	$2.738k + 0.25$ **$2.059 + 0.19/k$**
5	3.8 **2.48**	7.5 **2.40**	11.1 **2.38**	14.7 **2.37**	18.4 **2.36**	36.5 **2.34**	54.6 **2.33**	72.7 **2.83**	90.8 **2.33**	108.9 **2.33**	$3.623k + 0.25$ **$2.326 + 0.16/k$**
6	4.7 **2.67**	9.2 **2.60**	13.6 **2.58**	18.1 **2.57**	22.6 **2.56**	44.9 **2.55**	67.2 **2.54**	89.6 **2.54**	111.9 **2.54**	134.2 **2.54**	$4.466k + 0.25$ **$2.534 + 0.14/k$**
7	5.5 **2.83**	10.8 **2.77**	16.0 **2.75**	21.3 **2.74**	26.6 **2.73**	52.9 **2.72**	79.3 **2.71**	105.6 **2.71**	131.9 **2.71**	158.3 **2.71**	$5.267k + 0.25$ **$2.704 + 0.13/k$**
8	6.3 **2.96**	12.3 **2.91**	18.3 **2.89**	24.4 **2.88**	30.4 **2.87**	60.6 **2.86**	90.7 **2.85**	120.9 **2.85**	151.0 **2.85**	181.2 **2.85**	$6.031k + 0.25$ **$2.847 + 0.12/k$**
9	7.0 **3.08**	13.8 **3.02**	20.5 **3.01**	27.3 **3.00**	34.0 **2.99**	67.8 **2.98**	101.6 **2.98**	135.3 **2.98**	169.2 **2.97**	203.0 **2.97**	$6.759k + 0.25$ **$2.970 + 0.11/k$**
10	7.7 **3.18**	15.1 **3.13**	22.6 **3.11**	30.1 **3.10**	37.5 **3.10**	74.8 **3.09**	112.0 **3.08**	149.3 **3.08**	186.6 **3.08**	223.8 **3.08**	$7.453k + 0.25$ **$3.078 + 0.10/k$**

<부표 16> 누적이항분포표

$$P[X \le c] = \sum_{x=0}^{c} \binom{n}{x} p^x (1-p)^{n-x} = \sum_{x=0}^{c} p(x)$$

시료수	c	p										
		0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.70	080	0.90	0.95
$n=1$	0	0.950	0.900	0.800	0.700	0.600	0.500	0.400	0.300	0.200	0.100	0.150
	1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=2$	0	0.902	0.810	0.640	0.490	0.360	0.250	0.160	0.090	0.040	0.010	0.002
	1	0.997	0.990	0.960	0.910	0.840	0.750	0.640	0.510	0.360	0.190	0.097
	2	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=3$	0	0.857	0.729	0.512	0.343	0.216	0.125	0.064	0.027	0.008	0.001	0.000
	1	0.993	0.972	0.896	0.784	0.648	0.500	0.352	0.216	0.104	0.028	0.007
	2	1.000	0.999	0.992	0.973	0.936	0.875	0.784	0.657	0.488	0.271	0.143
	3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=4$	0	0.815	0.656	0.410	0.240	0.130	0.063	0.026	0.008	0.002	0.000	0.000
	1	0.986	0.948	0.810	0.652	0.475	0.313	0.179	0.084	0.027	0.004	0.000
	2	1.000	0.996	0.973	0.916	0.821	0.688	0.525	0.348	0.181	0.052	0.014
	3	1.000	1.000	0.998	0.992	0.974	0.938	0.870	0.760	0.590	0.344	0.185
	4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=5$	0	0.774	0.590	0.328	0.168	0.078	0.031	0.010	0.002	0.000	0.000	0.000
	1	0.977	0.919	0.737	0.528	0.337	0.188	0.087	0.031	0.007	0.000	0.000
	2	0.999	0.991	0.942	0.837	0.683	0.500	0.317	0.163	0.058	0.009	0.001
	3	1.000	1.000	0.993	0.969	0.913	0.813	0.663	0.472	0.263	0.081	0.023
	4	1.000	1.000	1.000	0.998	0.990	0.969	0.922	0.832	0.672	0.410	0.226
	5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=6$	0	0.735	0.531	0.262	0.118	0.047	0.016	0.004	0.001	0.000	0.000	0.000
	1	0.967	0.886	0.655	0.420	0.233	0.109	0.041	0.011	0.000	0.000	0.000
	2	0.998	0.984	0.901	0.744	0.544	0.344	0.179	0.070	0.017	0.001	0.000
	3	1.000	0.999	0.983	0.930	0.821	0.656	0.456	0.256	0.099	0.016	0.002
	4	1.000	1.000	0.998	0.989	0.959	0.891	0.767	0.580	0.345	0.114	0.033
	5	1.000	1.000	1.000	0.999	0.996	0.984	0.953	0.882	0.738	0.469	0.265
	6	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=7$	0	0.698	0.478	0.210	0.082	0.028	0.008	0.002	0.000	0.000	0.000	0.000
	1	0.956	0.850	0.577	0.329	0.159	0.063	0.019	0.004	0.000	0.000	0.000
	2	0.996	0.974	0.852	0.647	0.420	0.227	0.096	0.029	0.005	0.000	0.000
	3	1.000	0.997	0.967	0.874	0.710	0.500	0.290	0.126	0.033	0.003	0.000
	4	1.000	1.000	0.995	0.971	0.904	0.773	0.580	0.353	0.148	0.026	0.004
	5	1.000	1.000	1.000	0.996	0.981	0.938	0.841	0.671	0.423	0.150	0.044
	5	1.000	1.000	1.000	1.000	0.998	0.992	0.972	0.918	0.790	0.522	0.302
	7	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

<부표 16>의 계속

시료수	c	p										
		0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.70	080	0.90	0.95
$n=8$	0	0.663	0.430	0.168	0.058	0.017	0.004	0.001	0.000	0.000	0.000	0.000
	1	0.943	0.813	0.503	0.255	0.103	0.035	0.009	0.001	0.000	0.000	0.000
	2	0.994	0.962	9.797	0.552	0.315	0.145	0.050	0.001	0.001	0.000	0.000
	3	1.000	0.995	0.944	0.806	0.594	0.363	0.174	0.058	0.010	0.000	0.000
	4	1.000	0.995	0.990	0.942	0.826	0.637	0.406	0.194	0.056	0.005	0.000
	5	1.000	0.995	0.999	0.989	0.950	0.855	0.685	0.448	0.203	0.038	0.000
	6	1.000	1.000	1.000	0.999	0.991	0.965	0.894	0.745	0.497	0.187	0.000
	7	1.000	1.000	1.000	1.000	0.999	0.996	0.983	0.942	0.832	0.570	0.337
	8	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=9$	0	0.630	0.387	0.134	0.040	0.010	0.002	0.000	0.000	0.000	0.000	0.000
	1	0.929	0.775	0.436	0.196	0.071	0.020	0.004	0.000	0.000	0.000	0.000
	2	0.992	0.947	0.738	0.463	0.232	0.090	0.025	0.004	0.000	0.000	0.000
	3	0.999	0.992	0.914	0.730	0.483	0.254	0.099	0.025	0.003	0.000	0.000
	4	1.000	0.999	0.980	0.901	0.733	0.500	0.267	0.099	0.020	0.001	0.000
	5	1.000	1.000	0.997	0.975	0.901	0.746	0.517	0.270	0.086	0.008	0.001
	6	1.000	1.000	1.000	0.996	0.975	0.910	0.768	0.537	0.262	0.053	0.008
	7	1.000	1.000	1.000	1.000	0.996	0.980	0.929	0.804	0.564	0.225	0.071
	8	1.000	1.000	1.000	1.000	1.000	0.998	0.990	0.960	0.866	0.613	0.370
	9	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=10$	0	0.599	0.349	0.107	0.028	0.006	0.001	0.000	0.000	0.000	0.000	0.000
	1	0.914	0.736	0.376	0.149	0.146	0.011	0.002	0.000	0.000	0.000	0.000
	2	0.988	0.930	0.678	0.383	0.167	0.055	0.012	0.002	0.000	0.000	0.000
	3	0.999	0.987	0.879	0.650	0.382	0.172	0.055	0.011	0.001	0.000	0.000
	4	1.000	0.998	0.967	0.850	0.633	0.377	0.166	0.047	0.006	0.000	0.000
	5	1.000	1.000	0.994	0.953	0.834	0.623	0.367	0.150	0.033	0.002	0.000
	6	1.000	1.000	0.999	0.989	0.945	0.828	0.613	0.350	0.121	0.013	0.001
	7	1.000	1.000	1.000	0.998	0.998	0.945	0.833	0.617	0.322	0.070	0.012
	8	1.000	1.000	1.000	1.000	0.998	0.989	0.954	0.851	0.624	0.264	0.086
	9	1.000	1.000	1.000	1.000	1.000	0.999	0.994	0.972	0.893	0.651	0.401
	10	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
$n=11$	0	0.569	0.314	0.086	0.020	0.004	0.000	0.000	0.000	0.000	0.000	0.000
	1	0.898	0.697	0.322	0.113	0.030	0.006	0.001	0.000	0.000	0.000	0.000
	2	0.985	0.910	0.617	0.313	0.119	0.033	0.006	0.001	0.000	0.000	0.000
	3	0.998	0.981	0.839	0.570	0.290	0.113	0.029	0.004	0.000	0.000	0.000
	4	1.000	0.997	0.950	0.790	0.533	0.274	0.099	0.022	0.002	0.000	0.000
	5	1.000	1.000	0.988	0.922	0.753	0.500	0.247	0.078	0.012	0.000	0.000
	6	1.000	1.000	0.998	0.978	0.901	0.726	0.467	0.210	0.050	0.003	0.000
	7	1.000	1.000	1.000	0.996	0.971	0.887	0.704	0.430	0.161	0.019	0.002
	8	1.000	1.000	1.000	0.999	0.994	0.967	0.881	0.687	0.383	0.090	0.015
	9	1.000	1.000	1.000	1.000	0.999	0.994	0.970	0.887	0.678	0.303	0.102
	10	1.000	1.000	1.000	1.000	1.000	1.000	0.996	0.980	0.914	0.686	0.431
	11	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

<부표 17> 누적포아송분포표

$$P[X \le c] = \sum_{x=0}^{c} \frac{e^{-m} m^{x}}{x!}$$

c	m									
	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
0	0.905	0.819	0.741	0.670	0.607	0.549	0.497	0.449	0.407	0.368
1	0.995	0.982	0.963	0.938	0.910	0.878	0.844	0.809	0.772	0.736
2	1.000	0.999	0.996	0.992	0.986	0.977	0.966	0.953	0.937	0.920
3	1.000	1.000	1.000	0.999	0.998	0.997	0.994	0.991	0.987	0.981
4	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.996
5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999
6	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
7	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

c	m									
	1.11	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00
0	0.333	0.301	0.273	0.247	0.223	0.202	0.183	0.165	0.150	0.135
1	0.699	0.663	0.627	0.592	0.558	0.525	0.493	0.463	0.434	0.406
2	0.900	0.879	0.857	0.833	0.809	0.783	0.757	0.731	0.704	0.677
3	0.974	0.966	0.957	0.946	0.934	0.921	0.907	0.891	0.875	0.857
4	0.995	0.992	0.989	0.986	0.981	0.976	0.970	0.964	0.956	0.947
5	0.999	0.998	0.998	0.997	0.996	0.994	0.992	0.990	0.987	0.983
6	1.000	1.000	1.000	0.999	0.999	0.999	0.998	0.997	0.997	0.995
7	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999
8	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
9	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

c	m									
	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00
0	0.122	0.111	0.100	0.091	0.082	0.074	0.067	0.061	0.055	0.050
1	0.380	0.355	0.331	0.308	0.287	0.267	0.249	0.231	0.215	0.199
2	0.650	0.623	0.596	0.570	0.544	0.518	0.494	0.469	0.446	0.423
3	0.839	0.819	0.799	0.779	0.758	0.736	0.714	0.692	0.670	0.647
4	0.938	0.928	0.916	0.904	0.891	0.877	0.863	0.848	0.832	0.815
5	0.980	0.975	0.970	0.964	0.958	0.951	0.943	0.935	0.926	0.916
6	0.994	0.993	0.991	0.988	0.986	0.983	0.979	0.976	0.971	0.966
7	0.999	0.998	0.997	0.997	0.996	0.995	0.993	0.992	0.990	0.988
8	1.000	1.000	0.999	0.999	0.999	0.999	0.998	0.998	0.997	0.996
9	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.999
10	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
11	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

<부표 17>의 계속

c	m									
	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00
0	0.045	0.041	0.037	0.033	0.030	0.027	0.025	0.022	0.020	0.018
1	0.185	0.071	0.159	0.147	0.136	0.126	0.116	0.107	0.099	0.092
2	0.401	0.380	0.359	0.340	0.321	0.303	0.285	0.269	0.253	0.238
3	0.625	0.603	0.580	0.558	0.537	0.515	0.494	0.473	0.453	0.433
4	0.798	0.781	0.763	0.744	0.725	0.706	0.687	0.668	0.648	0.629
5	0.906	0.895	0.883	0.871	0.858	0.844	0.830	0.816	0.801	0.785
6	0.961	0.955	0.949	0.942	0.935	0.927	0.918	0.909	0.899	0.899
7	0.986	0.983	0.980	0.977	0.973	0.969	0.965	0.960	0.955	0.944
8	0.995	0.994	0.993	0.992	0.990	0.988	0.986	0.984	0.981	0.979
9	0.999	0.998	0.998	0.997	0.997	0.996	0.995	0.994	0.993	0.992
10	1.000	1.000	0.999	0.999	0.999	0.999	0.998	0.998	0.998	0.997
11	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999
12	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
13	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
14	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

c	m									
	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00
0	0.011	0.007	0.004	0.002	0.002	0.001	0.001	0.000	0.000	0.000
1	0.061	0.040	0.027	0.017	0.011	0.007	0.005	0.003	0.002	0.001
2	0.174	0.125	0.088	0.062	0.043	0.030	0.020	0.014	0.009	0.006
3	0.342	0.265	0.202	0.151	0.112	0.082	0.059	0.042	0.030	0.021
4	0.532	0.440	0.358	0.285	0.224	0.173	0.132	0.100	0.074	0.055
5	0.703	0.616	0.529	0.446	0.369	0.301	0.241	0.191	0.150	0.116
6	0.831	0.762	0.686	0.606	0.527	0.450	0.378	0.313	0.256	0.207
7	0.913	0.867	0.809	0.744	0.673	0.599	0.525	0.453	0.386	0.324
8	0.960	0.932	0.894	0.847	0.792	0.729	0.662	0.593	0.523	0.456
9	0.983	0.968	0.946	0.916	0.877	0.830	0.776	0.717	0.653	0.857
10	0.993	0.986	0.975	0.957	0.933	0.901	0.862	0.816	0.763	0.706
11	0.998	0.995	0.989	0.980	0.966	0.947	0.921	0.888	0.849	0.803
12	0.999	0.998	0.996	0.991	0.984	0.973	0.957	0.936	0.909	0.876
13	1.000	0.999	0.998	0.996	0.993	0.987	0.978	0.966	0.949	0.926
14	1.000	1.000	0.999	0.999	0.997	0.994	0.990	0.983	0.973	0.959
15	1.000	1.000	1.000	0.999	0.999	0.998	0.995	0.992	0.986	0.978
16	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.996	0.993	0.989
17	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.997	0.995
18	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998
19	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999
20	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
21	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
22	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

<부표 18> 이항계수표

$${}_nC_r = \binom{n}{r} = \frac{n!}{r!(n-r)!}$$

r \ n	1	2	3	4	5	6	7	8	9	10
0	1	1	1	1	1	1	1	1	1	1
1	1	2	3	4	5	6	7	8	9	10
2		1	3	6	10	15	21	28	36	45
3			1	4	10	20	35	56	84	120
4				1	5	15	35	70	126	210
5					1	6	21	56	126	252
6						1	7	28	84	210
7							1	8	36	120
8								1	9	45
9									1	10
10										1

r \ n	11	12	13	14	15	16	17	18	19	20
0	1	1	1	1	1	1	1	1	1	1
1	11	12	13	14	15	16	17	18	19	20
2	55	66	78	91	105	120	136	153	171	190
3	165	220	286	364	455	560	680	816	969	1140
4	330	495	715	1001	1365	1820	2380	3060	3876	4845
5	462	792	1287	2002	3003	4368	6188	8568	11628	15504
6	462	924	1716	3003	5005	8008	12376	18564	27132	38760
7	330	792	1716	3432	6435	11440	19448	31824	50388	77520
8	165	495	1287	3003	6435	12870	24310	43758	75582	125970
9	55	220	715	2002	5005	11440	24310	48620	92378	167960
10	11	66	286	1001	3003	8008	19448	43758	92378	184756
11	1	12	78	364	1365	4368	12376	31824	75582	167960
12		1	13	91	455	1820	6188	18564	50388	125970
13			1	14	105	560	2380	8568	27132	77520
14				1	15	120	680	3060	11628	38760
15					1	16	136	816	3876	15504
16						1	17	153	969	4845
17							1	18	171	1140
18								1	19	190
19									1	20
20										1

<부표 19> 정규확률분포표

$$f(t) = \phi(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2} \cdot z^2\right)$$

z	*=0	*=1	*=2	*=3	*=4	*=5	*=6	*=7	*=8	*=9
0.0*	.3989	.3989	.3989	.3988	.3986	.3984	.3982	.3980	.3977	.3973
0.1*	.3970	.3965	.3961	.3956	.3951	.3945	.3939	.3932	.3925	.3918
0.2*	.3910	.3902	.3894	.3885	.3876	.3867	.3857	.3847	.3836	.3825
0.3*	.3914	.3802	.3970	.3778	.3765	.3752	.3739	.3725	.3712	.3697
0.4*	.3683	.3668	.3653	.3637	.3605	.3605	.3589	.3572	.3555	.3538
0.5*	.3521	.3503	.3485	.3467	.3448	.3429	.3410	.3391	.3372	.3352
0.6*	.3332	.3312	.3292	.3271	.3251	.3230	.3209	.3187	.3166	.3144
0.7*	.3123	.3101	.3079	.3056	.3034	.3011	.2989	.2966	.2943	.2920
0.8*	.2879	.2874	.2850	.2827	.2803	.2780	.2756	.2732	.2709	.2685
0.9*	.2661	.2637	.2613	.2589	.2565	.2541	.2516	.2492	.2468	.2444
1.0*	.2420	.2396	.2371	.2347	.2323	.2299	.2275	.2251	.2227	.2203
1.1*	.2179	.2155	.2131	.2107	.2083	.2059	.2036	.2012	.1989	.1965
1.2*	.1942	.1919	.1895	.1872	.1849	.1826	.1804	.1781	.1753	.1736
1.3*	.1714	.1691	.1669	.1647	.1626	.1604	.1582	.1561	.1539	.1518
1.4*	.1497	.1476	.1456	.1435	.1415	.1394	.1374	.1354	.1334	.1315
1.5*	.1295	.1276	.1257	.1238	.1219	.1200	.1182	.1163	.1146	.1127
1.6*	.1109	.1092	.1074	.1057	.1040	.1023	.1006	.09893	.09728	.09566
1.7*	.09405	.09246	.09089	.08933	.08780	.08628	.08478	.08329	.08183	.08038
1.8*	.07895	.07754	.07614	.07477	.07341	.07206	.07074	.06943	.06814	.06687
1.9*	.06562	.06438	.06316	.06195	.06077	.05959	.05844	.05730	.05618	.05508
2.0*	.05399	.05292	.05186	.05082	.04980	.04879	.04780	.04682	.04586	.04491
2.1*	.04398	.04307	.04217	.04128	.04041	.03955	.03871	.03788	.03706	.03626
2.2*	.03547	.03470	.03394	.03319	.03246	.03174	.03103	.03034	.02965	.02898
2.3*	.02833	.02768	.02705	.02643	.02582	.02522	.02763	.02406	.02349	.02294
2.4*	.02239	.02186	.02134	.02083	.02033	.01984	.01936	.01888	.01842	.01797
2.5*	.01753	.01709	.01667	.01625	.01585	.01545	.01506	.01468	.01431	.01394
2.6*	.01358	.01323	.01289	.01256	.01223	.01191	.01160	.01130	.01100	.01071
2.7*	.01042	.01014	.09871	$.0^2$9606	$.0^2$9347	$.0^2$9094	$.0^2$8846	$.0^2$8605	$.0^2$8370	$.0^2$8140
2.8*	$.0^2$7915	$.0^2$7697	$.0^2$7483	$.0^2$7274	$.0^2$7071	$.0^2$6873	$.0^2$6679	$.0^2$6491	$.0^2$6307	$.0^2$6127
2.9*	$.0^2$5953	$.0^2$5782	$.0^2$5616	$.0^2$5454	$.0^2$5296	$.0^2$5143	$.0^2$4993	$.0^2$4847	$.0^2$4705	$.0^2$4567
3.0*	$.0^2$4432	$.0^2$4301	$.0^2$4173	$.0^2$4049	$.0^2$3928	$.0^2$3810	$.0^2$3695	$.0^2$3854	$.0^2$3475	$.0^2$3370
3.1*	$.0^2$3267	$.0^2$3167	$.0^2$3070	$.0^2$2975	$.0^2$2884	$.0^2$2794	$.0^2$2707	$.0^2$2623	$.0^2$2541	$.0^2$2461
3.2*	$.0^2$2384	$.0^2$2309	$.0^2$2236	$.0^2$2165	$.0^2$2096	$.0^2$2029	$.0^2$1964	$.0^2$1901	$.0^2$1840	$.0^2$1780
3.3*	$.0^2$1723	$.0^2$1667	$.0^2$1612	$.0^2$1560	$.0^2$1508	$.0^2$1459	$.0^2$1411	$.0^2$1364	$.0^2$1319	$.0^2$1275
3.4*	$.0^2$1232	$.0^2$1191	$.0^2$1151	$.0^2$1112	$.0^2$1075	$.0^2$1038	$.0^2$1003	$.0^2$9689	$.0^2$9358	$.0^2$9037
3.5*	$.0^3$8727	$.0^3$8426	$.0^3$8135	$.0^3$7853	$.0^3$7581	$.0^3$7317	$.0^3$7061	$.0^3$6814	$.0^3$6575	$.0^3$6343
3.6*	$.0^3$6119	$.0^3$5902	$.0^3$5693	$.0^3$5490	$.0^3$5294	$.0^3$5105	$.0^3$4921	$.0^3$4744	$.0^3$4573	$.0^3$4408
3.7*	$.0^3$4248	$.0^3$4093	$.0^3$3944	$.0^3$3800	$.0^3$3661	$.0^3$3526	$.0^3$3396	$.0^3$3721	$.0^3$3149	$.0^3$3032
3.8*	$.0^3$2919	$.0^3$2810	$.0^3$2705	$.0^3$2604	$.0^3$2506	$.0^3$2411	$.0^3$2320	$.0^3$2232	$.0^3$2147	$.0^3$2065
3.9*	$.0^3$1987	$.0^3$1910	$.0^3$1837	$.0^3$1766	$.0^3$1698	$.0^3$1633	$.0^3$1569	$.0^3$1508	$.0^3$1449	$.0^3$1393
4.0*	$.0^3$1338	$.0^3$1286	$.0^3$1235	$.0^3$1186	$.0^3$1140	$.0^3$1094	$.0^3$1051	$.0^3$1009	$.0^4$9687	$.0^4$9299
4.1*	$.0^4$8926	$.0^4$8567	$.0^4$8222	$.0^4$7890	$.0^4$7570	$.0^4$7263	$.0^4$6967	$.0^4$6683	$.0^4$6410	$.0^4$6147
4.2*	$.0^4$5894	$.0^4$5652	$.0^4$5418	$.0^4$5194	$.0^4$4979	$.0^4$4772	$.0^4$4573	$.0^4$4382	$.0^4$4199	$.0^4$4023
4.3*	$.0^4$3854	$.0^4$3691	$.0^4$3535	$.0^4$3386	$.0^4$3242	$.0^4$3104	$.0^4$2972	$.0^4$2845	$.0^4$2723	$.0^4$2606
4.4*	$.0^4$2494	$.0^4$2387	$.0^4$2284	$.0^4$2185	$.0^4$2090	$.0^4$1999	$.0^4$1912	$.0^4$1829	$.0^4$1749	$.0^4$1672
4.5*	$.0^4$1598	$.0^4$1628	$.0^4$1461	$.0^4$1393	$.0^4$1334	$.0^4$1275	$.0^4$1218	$.0^4$1164	$.0^4$1112	$.0^4$1062
4.6*	$.0^4$1014	$.0^5$9684	$.0^5$9248	$.0^5$8850	$.0^5$8430	$.0^5$8047	$.0^5$7681	$.0^5$7331	$.0^5$6996	$.0^5$6676
4.7*	.06370	$.0^5$6077	$.0^5$5797	$.0^5$5530	$.0^5$5374	$.0^5$5030	$.0^5$4796	$.0^5$4573	$.0^5$4360	$.0^5$4156
4.8*	.03961	$.0^5$3775	$.0^5$3598	$.0^5$3428	$.0^5$3267	$.0^5$3112	$.0^5$2965	$.0^5$2824	$.0^5$2690	$.0^5$2561
4.9*	.02439	$.0^5$2322	$.0^5$2211	$.0^5$2105	$.0^5$2003	$.0^5$1907	$.0^5$1811	$.0^5$1727	$.0^5$1643	$.0^5$1563

【주】 $z = 0.5$ 일 때 $\phi(z) = 0.3521$ 이며, $z = -5$ 일 때도 식에서 z^2 은 (+)값이므로 $\phi(z = -0.5) = 0.3521$ 로 구한다.

<부표 20> 정규누적확률분포표

$$F(t)=\Phi(z)=\int_{-\infty}^{z}\frac{1}{\sqrt{2\pi}}\cdot\exp\left(-\frac{1}{2}z^2\right)dt=\int_{-\infty}^{z}\phi(z)dt=\Phi\left(\frac{t-\mu}{\sigma}\right)$$

z	$\Phi(z)$	z	$\Phi(z)$	z	$\Phi(z)$	z	$\Phi(z)$	z	$\Phi(z)$	z	$\Phi(z)$
.00	.50000	.60	.72575	1.20	.88493	1.80	.96047	2.40	.99180	3.00	.99865
.01	.50339	.61	.72907	1.21	.88686	1.81	.96485	2.41	.99202	3.01	.99869
.02	.50798	.62	.73237	1.22	.88877	1.82	.96562	2.42	.99224	3.02	.99874
.03	.51197	.63	.73565	1.23	.89065	1.83	.96638	2.43	.99245	3.03	.99878
.04	.51595	.64	.73891	1.24	.89251	1.84	.96762	2.44	.99266	3.04	.99882
.05	.51994	.65	.74215	1.25	.89435	1.85	.96784	2.45	.99286	3.05	.99886
.06	.52392	.66	.74537	1.26	.89617	1.86	.96856	2.46	.99305	3.06	.99889
.07	.52790	.67	.74857	1.27	.89795	1.87	.96926	2.47	.99324	3.07	.99893
.08	.53188	.68	.75175	1.28	.89973	1.88	.96995	2.48	.99343	3.08	.99896
.09	.53586	.69	.75490	1.29	.90147	1.89	.97062	2.49	.99361	3.09	.99900
.10	.53983	.70	.75804	1.30	.90320	1.90	.97128	2.50	.99379	3.10	.99903
.11	.54380	.71	.76115	1.31	.90490	1.91	.97193	2.51	.99396	3.11	.99906
.12	.54776	.72	.76424	1.32	.90658	1.92	.97257	2.52	.99413	3.12	.99910
.13	.55172	.73	.76731	1.33	.90824	1.93	.97320	2.53	.99430	3.13	.99913
.14	.55567	.74	.77035	1.34	.90988	1.94	.97381	2.54	.99446	3.14	.99916
.15	.55962	.75	.77337	1.35	.91149	1.95	.97441	2.55	.99461	3.15	.99918
.16	.56356	.76	.77637	1.36	.91308	1.96	.97500	2.56	.99477	3.16	.99921
.17	.56750	.77	.77935	1.37	.91466	1.97	.97558	2.57	.99492	3.17	.99924
.18	.57142	.78	.78230	1.38	.91621	1.98	.97615	2.58	.99506	3.18	.99926
.19	.57535	.79	.78524	1.39	.91774	1.99	.97670	2.59	.99520	3.19	.99929
.20	.57926	.80	.78814	1.40	.91924	2.00	.97725	2.60	.99534	3.20	.99931
.21	.58317	.81	.79103	1.41	.92073	2.01	.97778	2.61	.99557	3.21	.99934
.22	.58706	.82	.79389	1.42	.92220	2.02	.97831	2.62	.99560	3.22	.99936
.23	.59095	.83	.79673	1.43	.92364	2.03	.97882	2.63	.99573	3.23	.99938
.24	.59483	.84	.79955	1.44	.92507	2.04	.97932	2.64	.99585	3.24	.99940
.25	.59871	.85	.80234	1.45	.92647	2.05	.97982	2.65	.99598	3.25	.99942
.26	.60257	.86	.80511	1.46	.92785	2.06	.98030	2.66	.99609	3.26	.99944
.27	.60642	.87	.80785	1.47	.92922	2.07	.98077	2.67	.99621	3.29	.99946
.28	.61026	.88	.81057	1.48	.93056	2.08	.98124	2.68	.99632	3.28	.99948
.29	.61409	.89	.81327	1.49	.93189	2.09	.98169	2.69	.99643	3.29	.99950
.30	.61791	.90	.81594	1.50	.93319	2.10	.98214	2.70	.99653	3.30	.99952
.31	.62172	.91	.81858	1.51	.93448	2.11	.98257	2.71	.99664	3.31	.99953
.32	.62552	.92	.82121	1.52	.93574	2.12	.98300	2.72	.99674	3.32	.99955
.33	.62930	.93	.82381	1.53	.93699	2.13	.98341	2.73	.99683	3.33	.99957
.34	.63307	.94	.82639	1.54	.93822	2.14	.98382	2.74	.99693	3.34	.99958
.35	.63683	.95	.82894	1.55	.93943	2.15	.98422	2.75	.99702	3.35	.99960
.36	.64058	.96	.83147	1.56	.94062	2.16	.98461	2.76	.99711	3.36	.99961
.37	.64431	.97	.83398	1.57	.94179	2.17	.98500	2.77	.99720	3.37	.99962
.38	.64803	.98	.83646	1.58	.94295	2.18	.98537	2.78	.99728	3.38	.99964
.39	.65173	.99	.83891	1.59	.94408	2.19	.98574	2.79	.99736	3.39	.99965
.40	.65542	1.00	.84134	1.60	.94520	2.20	.98610	2.80	.99744	3.40	.99966
.41	.65910	1.01	.84375	1.61	.94630	2.21	.98645	2.81	.99752	3.41	.99968
.41	.66276	1.02	.84614	1.62	.94738	2.22	.98679	2.82	.99760	3.42	.99969
.43	.66640	1.03	.84850	1.63	.94845	2.23	.98713	2.83	.99767	3.43	.99970
.44	.67003	1.04	.85083	1.64	.94950	2.24	.98745	2.84	.99774	3.44	.99971
.45	.67364	1.05	.85314	1.65	.95053	2.25	.98778	2.85	.99781	3.45	.99972
.46	.67724	1.06	.85543	1.66	.95154	2.26	.93809	2.86	.99788	3.46	.99973
.47	.68082	1.07	.85769	1.67	.95254	2.27	.98840	2.87	.99795	3.47	.99974
.48	.68439	1.08	.85993	1.68	.95352	2.28	.98870	2.88	.99801	3.48	.99975
.49	.68793	1.09	.86214	1.69	.95449	2.29	.98899	2.89	.99807	3.49	.99976
.50	.69146	1.10	.86433	1.70	.95543	2.30	.98928	2.90	.99813	3.50	.99977
.51	.69497	1.11	.86650	1.71	.95637	2.31	.98956	2.91	.99819		
.52	.69847	1.12	.86864	1.72	.95728	2.32	.98983	2.92	.99825		
.52	.70194	1.13	.87076	1.73	.95818	2.33	.99010	2.93	.99831		
.54	.70540	1.14	.87286	1.74	.95907	2.34	.99036	2.94	.99836		
.55	.70884	1.15	.87493	1.75	.95994	2.35	.99061	2.95	.99841		
.56	.71226	1.16	.87698	1.76	.96080	2.36	.99086	2.96	.99846		
.57	.71566	1.17	.87900	1.77	.96164	2.37	.99111	2.97	.99851		
.58	.71904	1.18	.88100	1.78	.96246	2.38	.99134	2.98	.99856		
.59	.72240	1.19	.88298	1.79	.96327	2.39	.99158	2.99	.99861		

【주】 $\Phi(z)$는 $-\infty$에서 z까지 적분한 값이므로 $z=0.5$일 때 $\Phi(0.5)=0.69146$이고,
$z=-0.5$일 때 $\Phi(-0.5)=1-0.69146=0.30854$이다

<부표 21> 감마함수표

$$\Gamma(x)=\int_0^{\infty} t^{x-1}\cdot e^{-t}dt \quad (x>0)$$

x	$\Gamma(x)$	$10+\log_{10}\Gamma(x)$	x	$\Gamma(x)$	$10+\log_{10}\Gamma(x)$	x	$\Gamma(x)$	$10+\log_{10}\Gamma(x)$
1.00	1.00000	10.00000						
1.01	0.99433	9.99753	1.51	0.88659	9.94772	2.01	1.00427	0.00185
1.02	.98874	9.99513	1.52	.88704	9.94794	2.02	1.00862	.00373
1.03	.98355	9.99280	1.53	.88757	9.94820	2.03	1.01306	.00563
1.04	.97844	9.99053	1.54	.88818	9.94850	2.04	1.01758	.00757
1.05	.97350	9.98834	1.55	.88887	9.94884	2.05	0.02218	.00953
1.06	.96874	9.98621	1.56	.88964	9.94921	2.06	1.02687	.01151
1.07	.96415	9.98415	1.57	.89049	9.94963	2.07	1.03164	.01353
1.08	.95973	9.98215	1.58	.89142	9.95008	2.08	1.03650	.01557
1.09	.95546	9.98021	1.59	.89243	9.95057	2.09	1.04145	.01764
1.10	.95135	9.97834	1.60	.89352	9.95110	2.10	1.04649	.09173
1.11	.94740	9.97653	1.61	.89468	9.95167	2.11	1.05161	.02185
1.12	.94359	9.97478	1.62	.89592	9.95227	2.12	1.05682	.02400
1.13	.93993	9.97310	1.63	.89724	9.95291	2.13	1.06212	.02617
1.14	.93642	9.97147	1.64	.89864	9.95358	2.14	1.06751	.02837
1.15	.93304	9.96990	1.65	.90012	9.95430	2.15	1.07300	.03060
1.16	.92980	9.96839	1.66	.90167	9.95505	2.16	1.07857	.03285
1.17	.92670	9.96694	1.67	.90330	9.95583	2.17	1.08424	.03512
1.18	.92373	9.96554	1.68	.90500	9.95665	2.18	1.09000	.03743
1.19	.92089	9.96421	1.69	.90678	9.95750	2.19	1.09585	.03975
1.20	.91817	9.96292	1.70	.90864	9.95839	2.20	1.10180	.04210
1.21	.91558	9.96169	1.71	.91057	9.95931	2.21	1.10785	.04448
1.22	.91311	9.96052	1.72	.91258	9.96027	2.22	1.11399	.04688
1.23	.91075	9.95940	1.73	.91467	9.96126	2.23	1.12023	.04931
1.24	.90852	9.95834	1.74	.91683	9.96229	2.24	1.12657	.05176
1.25	.90640	9.95732	1.75	.91906	9.96335	2.25	1.13300	.05423
1.26	.90440	9.95636	1.76	.92137	9.96444	2.26	1.13954	.05673
1.27	.90250	9.95545	1.77	.92376	9.96556	2.27	1.14618	.05925
1.28	.90072	9.95459	1.78	.92623	9.96672	2.28	1.15292	.06180
1.29	.89904	9.95378	1.79	.92877	9.96791	2.29	1.15976	.06437
1.30	.89747	9.95302	1.80	.93138	9.96913	2.30	1.16671	.06696
1.31	.89600	9.95231	1.81	.93408	9.97038	2.31	1.17377	.06958
1.32	.89464	9.95165	1.82	.93685	9.97167	2.32	1.18093	.07222
1.33	.89338	9.95104	1.83	.93969	9.97298	2.33	1.18819	.07489
1.34	.89222	9.95047	1.84	.94261	9.97433	2.34	1.19557	.07757
1.35	.89115	9.94995	1.85	.94561	9.97571	2.35	1.20305	.08029
1.36	.89018	9.94948	1.86	.94869	9.97712	2.36	1.21065	.08302
1.37	.88931	9.94905	1.87	.95184	9.97856	2.37	1.21836	.08578
1.38	.88854	9.94868	1.88	.95507	9.98004	2.38	1.22618	.08855
1.39	.88785	9.94834	1.89	.95838	9.98154	2.39	1.23412	.09136
1.40	.88726	9.94805	1.90	.96177	9.98307	2.40	1.24217	.09418
1.41	.88676	9.94781	1.91	.96523	9.98463	2.41	1.25034	.09703
1.42	.88636	9.94761	1.92	.96877	9.98622	2.42	1.25863	.09990
1.43	.88604	9.94745	1.93	.97240	9.98784	2.43	1.26703	.10279
1.44	.88581	9.94734	1.94	.97610	9.98948	2.44	1.27555	.10570
1.45	.88566	9.94727	1.95	.97988	9.99117	2.45	1.28421	.10864
1.46	.88560	9.94724	1.96	.98374	9.99288	2.46	1.29298	.11159
1.47	.88563	9.94725	1.97	.98768	9.99462	2.47	1.30188	.11457
1.48	.88575	9.94731	1.98	.99171	9.99638	2.48	1.31091	.11757
1.49	.88595	9.94741	1.99	.99581	9.99818	2.49	1.32006	.12059
1.50	.88623	9.94754	2.00	1.00000	10.00000	2.50	1.32934	.12364

<부표 22> MTBF(지수분포) 구간추정 계수표 (정시중단)

고장수 r	60%		80%		90%		95%	
	상	하	상	하	상	하	상	하
1	4.481	0.334	9.491	0.257	19.496	0.211	39.498	0.179
2	2.426	0.467	3.761	0.376	5.630	0.318	8.262	0.277
3	1.945	0.544	2.722	0.449	3.669	0.387	4.849	0.342
4	1.742	0.595	2.293	0.500	2.928	0.437	3.670	0.391
5	1.618	0.632	2.055	0.539	2.538	0.476	3.080	0.429
6	1.537	0.661	1.904	0.570	2.296	0.507	2.725	0.459
7	1.479	0.684	1.797	0.595	2.131	0.532	2.487	0.485
8	1.435	0.703	1.718	0.616	2.010	0.554	2.316	0.508
9	1.400	0.719	1.657	0.634	1.917	0.573	2.187	0.527
10	1.372	0.733	1.607	0.649	1.843	0.590	2.085	0.544
11	1.349	0.744	1.567	0.663	1.783	0.604	2.003	0.559
12	1.329	0.755	1.533	0.675	1.733	0.617	1.935	0.572
13	1.312	0.764	1.504	0.686	1.691	0.629	1.878	0.585
14	1.297	0.772	1.478	0.696	1.654	0.640	1.829	0.596
15	1.284	0.780	1.456	0.704	1.622	0.649	1.787	0.606
16	1.272	0.787	1.437	0.713	1.594	0.658	1.750	0.616
17	1.262	0.793	1.419	0.720	1.569	0.667	1.717	0.625
18	1.253	0.799	1.404	0.727	1.547	0.674	1.687	0.633
19	1.244	0.804	1.390	0.734	1.527	0.682	1.661	0.640
20	1.237	0.809	1.377	0.740	1.509	0.688	1.637	0.647
21	1.230	0.813	1.365	0.745	1.492	0.694	1.615	0.654
22	1.223	0.818	1.354	0.750	1.477	0.700	1.596	0.660
23	1.217	0.822	1.344	0.755	1.463	0.706	1.578	0.666
24	1.211	0.825	1.355	0.760	1.450	0.711	1.561	0.672
25	1.206	0.829	1.327	0.764	1.438	0.716	1.545	0.677
26	1.201	0.832	1.319	0.768	1.427	0.721	1.531	0.682
27	1.197	0.835	1.311	0.772	1.417	0.725	1.517	0.687
28	1.193	0.838	1.304	0.776	1.407	0.729	1.505	0.692
29	1.189	0.841	1.298	0.780	1.398	0.733	1.493	0.696
30	1.185	0.844	1.291	0.783	1.389	0.737	1.482	0.700
40	1.156	0.865	1.245	0.810	1.325	0.768	1.400	0.734
50	1.137	0.879	1.214	0.829	1.283	0.790	1.347	0.759
60	1.124	0.839	1.193	0.843	1.254	0.807	1.370	0.777
70	1.113	0.898	1.176	0.854	1.232	0.820	1.283	0.791
80	1.105	0.904	1.163	0.863	1.214	0.830	1.261	0.803
90	1.098	0.910	1.153	0.870	1.200	0.839	1.244	0.814
100	1.093	0.915	1.144	0.877	1.189	0.847	1.229	0.822

<부표 23> MTBF(지수분포) 구간추정 계수표 (정수중단)

고장수 r	60%		80%		90%		95%	
	상	하	상	하	상	하	상	하
1	4.481	0.621	9.491	0.434	19.496	0.334	39.498	0.271
2	2.426	0.668	3.761	0.514	5.630	0.422	8.262	0.359
3	1.945	0.701	2.722	0.564	3.669	0.477	4.849	0.415
4	1.742	0.725	2.293	0.599	2.928	0.516	3.670	0.456
5	1.618	0.744	2.055	0.626	2.538	0.546	3.080	0.488
6	1.537	0.759	1.904	0.647	2.296	0.571	2.725	0.514
7	1.479	0.771	1.797	0.665	2.131	0.591	2.487	0.536
8	1.435	0.782	1.718	0.680	2.010	0.608	2.316	0.555
9	1.400	0.791	1.657	0.693	1.917	0.623	2.187	0.571
10	1.372	0.799	1.607	0.704	1.843	0.637	2.085	0.585
11	1.349	0.806	1.567	0.714	1.783	0.649	2.003	0.598
12	1.329	0.812	1.533	0.723	1.733	0.659	1.935	0.610
13	1.312	0.818	1.504	0.731	1.691	0.669	1.878	0.620
14	1.297	0.823	1.478	0.738	1.654	0.677	1.829	0.630
15	1.284	0.828	1.456	0.745	1.622	0.685	1.787	0.639
16	1.272	0.832	1.437	0.751	1.594	0.693	1.750	0.647
17	1.262	0.836	1.419	0.757	1.569	0.700	1.717	0.654
18	1.253	0.840	1.404	0.763	1.547	0.706	1.687	0.661
19	1.244	0.843	1.390	0.767	1.527	0.712	1.661	0.668
20	1.237	0.846	1.377	0.772	1.509	0.717	1.637	0.674
21	1.230	0.849	1.365	0.776	1.492	0.723	1.615	0.680
22	1.223	0.852	1.354	0.781	1.477	0.728	1.596	0.685
23	1.217	0.855	1.344	0.784	1.463	0.732	1.578	0.691
24	1.211	0.857	1.355	0.788	1.450	0.737	1.561	0.695
25	1.206	0.860	1.327	0.792	1.438	0.741	1.545	0.700
26	1.201	0.862	1.319	0.795	1.427	0.745	1.531	0.705
27	1.197	0.864	1.311	0.798	1.417	0.748	1.517	0.709
28	1.193	0.866	1.304	0.801	1.407	0.752	1.505	0.713
29	1.189	0.868	1.298	0.804	1.398	0.755	1.493	0.717
30	1.185	0.870	1.291	0.806	1.389	0.759	1.482	0.720
40	1.156	0.885	1.245	0.828	1.325	0.785	1.400	0.750
50	1.137	0.896	1.214	0.844	1.283	0.804	1.347	0.772
60	1.124	0.904	1.193	0.856	1.254	0.819	1.370	0.785
70	1.113	0.910	1.176	0.865	1.232	0.830	1.283	0.802
80	1.105	0.915	1.163	0.873	1.214	0.840	1.261	0.813
90	1.098	0.920	1.153	0.879	1.200	0.848	1.244	0.822
100	1.093	0.923	1.144	0.885	1.189	0.855	1.229	0.830

<부표 24> 오메가 변환표 (1)

$$dB = -10\log\left(\frac{1}{p} - 1\right)$$

p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB
0.0	00*	5.5	-12.350	11.0	-9.079	16.5	-7.041	22.0	-5.496	27.5	-4.209
0.1	-29.995	5.6	-12.267	11.1	-9.035	16.6	-7.010	22.1	-5.470	27.6	-4.187
0.2	-26.980	5.7	-12.185	11.2	-8.991	16.7	-6.978	22.2	-5.445	27.7	-4.166
0.3	-25.215	5.8	-12.105	11.3	-8.947	16.8	-6.947	22.3	-5.420	27.8	-4.144
0.4	-23.961	5.9	-12.026	11.4	-8.904	16.9	-6.916	22.4	-5.395	27.9	-4.122
0.5	-22.988	6.0	-11.949	11.5	-8.861	17.0	-6.885	22.5	-5.370	28.0	-4.101
0.6	-22.191	6.1	-11.872	11.6	-8.819	17.1	-6.855	22.6	-5.345	28.1	-4.079
0.7	-21.518	6.2	-11.797	11.7	-8.777	17.2	-6.824	22.7	-5.321	28.2	-4.058
0.8	-20.933	6.3	-11.723	11.8	-8.735	17.3	-6.794	22.8	-5.296	28.3	-4.036
0.9	-20.417	6.4	-11.650	11.9	-8.693	17.4	-6.763	22.9	-5.271	28.4	-4.015
1.0	-19.955	6.5	-11.578	12.0	-8.652	17.5	-6.733	23.0	-5.427	28.5	-3.994
1.1	-19.537	6.6	-11.507	12.1	-8.611	17.6	-6.703	23.1	-5.222	28.6	-3.972
1.2	-19.155	6.7	-11.437	12.2	-8.570	17.7	-6.673	23.2	-5.198	28.7	-3.951
1.3	-18.803	6.8	-11.368	12.3	-8.530	17.8	-6.644	23.3	-5.173	28.8	-3.930
1.4	-18.476	6.9	-11.300	12.4	-8.490	17.9	-6.614	23.4	-5.149	28.9	-3.909
1.5	-18.172	7.0	-11.233	12.5	-8.450	18.0	-6.584	23.5	-5.125	29.0	-3.888
1.6	-17.888	7.1	-11.167	12.6	-8.410	18.1	-6.555	23.6	-5.101	29.1	-3.867
1.7	-17.620	7.2	-11.101	12.7	-8.371	18.2	-6.526	23.7	-5.077	29.2	-3.846
1.8	-17.367	7.3	-11.037	12.8	-8.332	18.3	-6.497	23.8	-5.053	29.3	-3.825
1.9	-17.128	7.4	-10.973	12.9	-8.293	18.4	-6.468	23.9	-5.029	29.4	-3.804
2.0	-16.901	7.5	-10.910	13.0	-8.255	18.5	-6.439	24.0	-5.005	29.5	-3.787
2.1	-16.685	7.6	-10.848	13.1	-8.216	18.6	-6.410	24.1	-4.981	29.6	-3.762
2.2	-16.748	7.7	-10.786	13.2	-8.178	18.7	-6.381	24.2	-4.958	29.7	-3.741
2.3	-16.281	7.8	-10.725	13.3	-8.141	18.8	-6.353	24.3	-4.934	29.8	-3.720
2.4	-16.091	7.9	-10.655	13.4	-8.103	18.9	-6.325	24.4	-4.910	29.9	-3.699
2.5	-15.910	8.0	-10.606	13.5	-8.066	19.0	-6.296	24.5	-4.887	30.0	-3.679
2.6	-15.735	8.1	-10.547	13.6	-8.029	19.1	-6.268	24.6	-4.863	30.1	-3.658
2.7	-15.566	8.2	-10.489	13.7	-7.992	19.2	-6.240	24.7	-4.840	30.2	-3.537
2.8	-15.404	8.3	-10.432	13.8	-7.955	19.3	-6.212	24.8	-4.817	30.3	-3.617
2.9	-15.247	8.4	-10.375	13.9	-7.919	19.4	-6.184	24.9	-4.793	30.4	-3.596
3.0	-15.096	8.5	-10.319	14.0	-7.883	19.5	-6.157	25.0	-4.770	30.5	-3.576
3.1	-14.949	8.6	-10.263	14.1	-7.847	19.6	-6.129	25.1	-4.747	30.6	-3.555
3.2	-14.806	8.7	-10.209	14.2	-7.811	19.7	-6.101	25.2	-4.724	30.7	-3.535
3.3	-14.688	8.8	-10.154	14.3	-7.775	19.8	-6.074	25.3	-4.701	30.8	-3.515
3.4	-14.534	8.9	-10.100	14.4	-7.740	19.9	-6.047	25.4	-4.678	30.9	-3.494
3.5	-14.404	9.0	-10.047	14.5	-7.705	20.0	-6.020	25.5	-4.655	31.0	-3.474
3.6	-14.277	9.1	-9.994	14.6	-7.670	20.1	-5.993	25.6	-4.632	31.1	-3.454
3.7	-14.153	9.2	-9.942	14.7	-7.635	20.2	-5.996	25.7	-4.610	31.2	-3.433
3.8	-14.033	9.3	-9.890	14.8	-7.601	20.3	-5.939	25.8	-4.587	31.3	-3.413
3.9	-13.916	9.4	-9.839	14.9	-7.566	20.4	-5.912	25.9	-4.564	31.4	-3.393
4.0	-13.801	9.5	-9.788	15.0	-7.532	20.5	-5.885	26.0	-4.542	31.5	-3.373
4.1	-13.689	9.6	-9.738	15.1	-7.498	20.6	-5.859	26.1	-4.519	31.6	-3.353
4.2	-13.580	9.7	-9.688	15.2	-7.465	20.7	-5.832	26.2	-4.497	31.7	-3.333
4.3	-12.473	9.8	-9.639	15.3	-7.431	20.8	-5.806	26.3	-4.474	31.8	-3.313
4.4	-12.369	9.9	-9.570	15.4	-7.397	20.9	-5.779	26.4	-4.452	31.9	-3.293
4.5	-13.267	10.0	-9.541	15.5	-7.364	21.0	-5.753	26.5	-4.429	32.0	-3.273
4.6	-13.167	10.1	-9.493	15.6	-7.331	21.1	-5.727	26.6	-4.407	32.1	-3.253
4.7	-13.069	10.2	-9.446	15.7	-7.298	21.2	-5.701	26.7	-4.385	32.2	-3.233
4.8	-12.973	10.3	-9.399	15.8	-7.266	21.3	-5.675	26.8	-4.363	32.3	-3.213
4.8	-12.879	10.4	-9.352	15.9	-7.233	21.4	-5.649	26.9	-4.341	32.4	-3.193
5.0	-12.787	10.5	-9.305	16.0	-7.201	21.5	-5.623	27.0	-4.319	32.5	-3.173
5.1	-12.696	10.6	-9.259	16.1	-7.168	21.6	-5.598	27.1	-4.297	32.6	-3.153
5.2	-12.607	10.7	-9.214	16.2	-7.136	21.7	-5.572	27.2	-4.275	32.7	-3.134
5.3	-12.520	10.8	-9.168	16.3	-7.104	21.8	-5.547	27.3	-4.253	32.8	-3.114
5.4	-12.434	10.9	-9.124	16.4	-7.073	21.9	-5.521	27.4	-4.231	32.9	-3.094

오메가 변환표 (2)

$$dB = -10\log\left(\frac{1}{p} - 1\right)$$

p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB
33.0	-3.075	39.0	-1.943	45.0	-0.871	51.0	0.174	57.0	1.224	63.0	2.311
33.1	-3.055	39.1	-1.923	45.1	-0.853	51.1	0.191	57.1	1.242	63.1	2.330
33.2	-3.055	39.2	-1.905	45.2	-0.835	51.2	0.209	57.2	1.260	63.2	2.349
33.3	-3.016	39.3	-1.887	45.3	-0.818	51.3	0.226	57.3	1.277	63.3	2.367
33.4	-2.996	39.4	-1.869	45.4	-0.800	51.4	0.243	57.4	1.295	63.4	2.386
33.5	-2.977	39.5	-1.851	45.5	-0.783	51.5	0.261	57.5	1.313	63.5	2.405
33.6	-2.957	39.6	-1.832	45.6	-0.765	51.6	0.278	57.6	1.331	63.6	2.424
33.7	-2.938	39.7	-1.814	45.7	-0.748	51.7	0.295	57.7	1.348	63.7	2.442
33.8	-2.918	39.8	-1.796	45.8	-0.730	51.8	0.313	57.8	1.366	63.8	2.461
33.9	-2.899	39.9	-1.778	45.9	-0.713	51.9	0.330	57.9	1.384	63.9	2.480
34.0	-2.880	40.0	-1.760	46.0	-0.695	52.0	0.348	58.0	1.402	64.0	2.490
34.1	-2.860	40.1	-1.742	46.1	-0.678	52.1	0.365	58.1	1.420	64.1	2.518
34.2	-2.841	40.2	-1.724	46.2	-0.660	52.2	0.382	58.2	1.437	64.2	2.537
34.3	-2.822	40.3	-1.706	46.3	-0.643	52.3	0.400	58.3	1.455	64.3	2.555
34.4	-2.802	40.4	-1.688	46.4	-0.625	52.4	0.417	58.4	1.473	64.4	2.574
34.5	-2.783	40.5	-1.670	46.5	-0.608	52.5	0.435	58.5	1.491	64.5	2.593
34.6	-2.764	40.6	-1.652	46.6	-0.591	52.6	0.452	58.6	1.509	64.6	2.612
34.7	-2.745	40.7	-1.634	46.7	-0.573	52.7	0.469	58.7	1.527	64.7	2.631
34.8	-2.726	40.8	-1.616	46.8	-0.556	52.8	0.487	58.8	1.545	64.8	2.650
34.9	-2.707	40.9	-1.598	46.9	-0.538	52.9	0.504	58.9	1.563	64.9	2.669
35.0	-2.687	41.0	-1.580	47.0	-0.521	53.0	0.522	59.0	1.581	65.0	2.688
35.1	-2.668	41.1	-1.562	47.1	-0.503	53.1	0.539	59.1	1.599	65.1	2.708
35.2	-2.649	41.2	-1.544	47.2	-0.486	53.2	0.557	59.2	1.617	65.2	2.727
35.3	-2.630	41.3	-1.526	47.3	-0.468	53.3	0.574	59.3	1.635	65.3	2.746
35.4	-2.611	41.4	-1.508	47.4	-0.451	53.4	0.592	59.4	1.653	65.4	2.765
35.5	-2.592	41.5	-1.490	47.5	-0.434	53.5	0.609	59.5	1.671	65.5	2.784
35.6	-2.573	41.6	-1.472	47.6	-0.416	53.6	0.626	59.6	1.689	65.6	2.803
35.7	-2.554	41.7	-1.454	47.7	-0.399	53.7	0.644	59.7	1.707	65.7	2.823
35.8	-2.536	41.8	-1.436	47.8	-0.381	53.8	0.661	59.8	1.725	65.8	2.842
35.9	-2.517	41.9	-1.419	47.9	-0.364	53.9	0.679	59.9	1.743	65.9	2.861
36.0	-2.498	42.0	-1.401	48.0	-0.347	54.0	0.696	60.0	1.761	66.0	2.881
36.1	-2.479	42.1	-1.383	48.1	-0.329	54.1	0.714	60.1	1.779	66.1	2.900
36.2	-2.460	42.2	-1.365	48.2	-0.312	54.2	0.731	60.2	1.797	66.2	2.919
36.3	-2.441	42.3	-1.347	48.3	-0.294	54.3	0.749	60.3	1.815	66.3	2.939
36.4	-2.423	42.4	-1.330	48.4	-0.277	54.4	0.766	60.4	1.833	66.4	2.968
36.5	-2.404	42.5	-1.312	48.5	-0.260	54.5	0.784	60.5	1.852	66.5	2.978
36.6	-2.385	42.6	-1.294	48.6	-0.242	54.6	0.801	60.6	1.870	66.6	2.997
36.7	-2.366	42.7	-1.276	48.7	-0.225	54.7	0.819	60.7	1.888	66.7	3.017
36.8	-2.348	42.8	-1.259	48.8	-0.208	54.8	0.836	60.8	1.906	66.8	3.036
36.9	-2.329	42.9	-1.241	48.9	-0.190	54.9	0.854	60.9	1.924	66.9	3.056
37.0	-2.310	43.0	-1.223	49.0	-0.173	550	0.872	61.0	1.943	67.0	3.076
37.1	-2.292	43.1	-1.205	49.1	-0.155	551	0.889	61.1	1.961	67.1	3.095
37.2	-2.273	43.2	-1.188	49.2	-0.138	552	0.907	61.2	1.979	67.2	3.115
37.3	-2.255	43.3	-1.170	49.3	-0.121	553	0.924	61.3	1.997	67.3	3.135
37.4	-2.236	43.4	-1.152	49.4	-0.103	554	0.942	61.4	2.016	67.4	3.154
37.5	-2.217	43.5	-1.135	49.5	-0.086	555	0.959	61.5	2.034	67.5	3.174
37.6	-2.199	43.6	-1.117	49.6	-0.068	556	0.977	61.6	2.052	67.6	3.194
37.7	-2.180	43.7	-1.099	49.7	-0.051	557	0.995	61.7	2.071	67.7	3.214
37.8	-2.162	43.8	-1.082	49.8	-0.034	558	1.012	61.8	2.089	67.8	3.234
37.9	-2.144	43.9	-1.064	49.9	-0.016	559	1.030	61.9	2.108	67.9	3.254
38.0	-2.125	44.0	-1.046	50.0	0.000	560	1.047	62.0	2.126	68.0	3.274
38.1	-2.107	44.1	-1.029	50.1	0.017	561	1.065	62.1	2.145	68.1	3.294
38.2	-2.088	44.2	-1.011	50.2	0.035	562	1.083	62.2	2.163	68.2	3.314
28.3	-2.070	44.3	-0.994	50.3	0.052	563	1.100	62.3	2.181	68.3	3.334
38.4	-2.051	44.4	-0.976	50.4	0.069	564	1.118	62.4	2.200	68.4	3.354
38.5	-2.033	44.5	-0.958	50.5	0.087	565	1.136	62.5	2.218	68.5	3.374
38.6	-2.015	44.6	-0.941	50.6	0.104	566	1.153	62.6	2.237	68.6	3.394
38.7	-1.996	44.7	-0.923	50.7	0.122	567	1.171	62.7	2.256	68.7	3.414
38.8	-1.978	44.8	-0.906	50.8	0.139	568	1.189	62.8	2.274	68.8	3.434
38.9	-1.960	44.9	-0.888	50.9	0.156	569	1.206	62.9	2.293	68.9	3.455

오메가 변환표 (3)

$$dB = -10\log\left(\frac{1}{p} - 1\right)$$

p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB	p(%)	dB
69.0	3.475	74.5	4.656	80.0	6.021	85.5	7.706	91.0	10.048	96.5	14.405
69.1	3.495	74.6	4.679	80.1	6.048	85.6	7.741	91.1	10.111	96.6	14.535
69.2	3.516	74.7	4.702	80.2	6.075	85.7	7.776	91.2	10.155	96.7	14.669
69.3	3.536	74.8	4.725	80.3	6.102	85.8	7.812	91.3	10.210	96.8	14.807
69.4	3.556	74.9	4.748	80.4	6.130	85.9	7.848	91.4	10.264	96.9	14.950
69.5	3.577	75.0	4.771	80.5	6.158	86.0	7.884	91.5	10.320	97.0	15.097
69.6	3.597	75.1	4.794	80.6	6.185	86.1	7.920	91.6	10.376	97.1	15.248
69.7	3.618	75.2	4.818	80.7	6.213	86.2	7.956	91.7	10.433	97.2	15.405
69.8	3.638	75.3	4.841	80.8	6.241	86.3	7.993	91.8	10.490	97.3	15.567
69.9	3.659	75.4	4.864	80.9	6.269	86.4	8.030	91.9	10.548	97.4	15.736
70.0	3.680	75.5	4.888	81.0	6.297	86.5	8.067	92.0	10.607	97.5	15.911
70.1	3.700	75.6	4.911	81.1	6.326	86.6	8.104	92.1	10.666	97.6	16.092
70.2	3.721	75.7	4.935	81.2	6.354	86.7	8.142	92.2	10.726	97.7	16.282
70.3	3.742	75.8	4.959	81.3	6.382	86.8	8.179	92.3	10.787	97.8	16.479
70.4	3.763	75.9	4.982	81.4	6.411	86.9	8.217	92.4	10.849	97.9	16.686
70.5	3.784	76.0	5.006	81.5	6.440	87.0	8.256	92.5	10.911	98.0	16.902
70.6	3.805	76.1	5.030	81.6	6.469	87.1	8.294	92.6	10.974	98.1	17.129
70.7	3.826	76.2	5.054	81.7	6.498	87.2	8.333	92.7	11.038	98.2	17.368
70.8	3.847	76.3	5.078	81.8	6.527	87.3	8.372	92.8	11.102	98.3	17.621
70.9	3.868	76.4	5.102	81.9	6.556	87.4	8.411	92.9	11.168	98.4	17.889
71.0	3.889	76.5	5.126	82.0	6.585	87.5	8.451	93.0	11.234	98.5	18.173
71.1	3.910	76.6	5.150	82.1	6.615	87.6	8.491	93.1	11.301	98.6	18.477
71.2	3.931	76.7	5.174	82.2	6.645	87.7	8.531	93.2	11.369	98.7	18.804
71.3	3.952	76.8	5.199	82.3	6.674	87.8	8.571	93.3	11.438	98.8	19.156
71.4	3.973	76.9	5.223	82.4	6.704	87.9	8.612	93.4	11.508	98.9	19.538
71.5	3.995	77.0	5.248	82.5	6.734	88.0	8.653	93.5	11.579	99.0	19.956
71.6	4.016	77.1	5.272	82.6	6.764	88.1	8.694	93.6	11.651	99.1	20.418
71.7	4.037	77.2	5.297	82.7	6.795	88.2	8.736	93.7	11.724	99.2	20.934
71.8	4.059	77.3	5.322	82.8	6.825	88.3	8.778	93.8	11.798	99.3	21.519
71.9	4.080	77.4	5.346	82.9	6.856	88.4	8.820	93.9	11.873	99.4	22.192
72.0	4.102	77.5	5.371	83.0	6.886	88.5	8.862	94.0	11.950	99.5	22.989
72.1	4.123	77.6	5.396	83.1	6.917	88.6	8.905	94.1	12.027	99.6	23.962
72.2	4.145	77.7	5.421	83.2	6.948	88.7	8.948	94.2	12.106	99.7	25.216
72.3	4.167	77.8	5.446	83.3	6.979	88.8	8.992	94.3	12.186	99.8	26.981
72.4	4.188	77.9	5.471	83.4	7.011	88.9	9.036	94.4	12.268	99.9	29.996
72.5	4.210	78.0	5.497	83.5	7.042	89.0	9.080	94.5	12.351	100.0	∞*
72.6	4.232	78.1	5.522	83.6	7.074	89.1	9.125	94.6	12.435		
72.7	4.254	78.2	5.548	83.7	7.105	89.2	9.169	94.7	12.521		
72.8	4.276	78.3	5.573	83.8	7.137	89.3	9.215	94.8	12.608		
72.9	4.298	78.4	5.599	83.9	7.169	89.4	9.260	94.9	12.697		
73.0	4.320	78.5	5.624	84.0	7.202	89.5	9.306	95.0	12.788		
73.1	4.342	78.6	5.650	84.1	7.234	89.6	9.353	95.1	12.880		
73.2	4.364	78.7	5.676	84.2	7.267	89.7	9.400	95.2	12.974		
73.3	4.386	78.8	5.702	84.3	7.299	89.8	9.447	95.3	12.070		
73.4	4.408	78.9	5.728	84.4	7.332	89.9	9.494	95.4	12.188		
73.5	4.430	79.0	5.754	84.5	7.365	90.0	9.542	95.5	13.268		
73.6	4.453	79.1	5.780	84.6	7.398	90.1	9.591	95.6	13.370		
73.7	4.475	79.2	5.807	84.7	7.432	90.2	9.640	95.7	13.474		
73.8	4.498	79.3	5.833	84.8	7.466	90.3	9.689	95.8	13.581		
73.9	4.520	79.4	5.860	84.9	7.499	90.4	9.739	95.9	13.690		
74.0	4.543	79.5	5.886	85.0	7.533	90.5	9.789	96.0	13.802		
74.1	4.565	79.6	5.913	85.1	7.567	90.6	9.840	96.1	13.917		
74.2	4.588	79.7	5.940	85.2	7.602	90.7	9.891	96.2	14.034		
74.3	4.611	79.8	5.967	85.3	7.636	90.8	9.943	96.3	14.154		
74.4	4.633	79.9	5.994	85.4	7.671	90.9	9.995	96.4	14.278		

<부표 25> 데시벨(dB)표 (1)

$dB = 10\log\eta$

η	dB	η	dB	η	dB	η	dB	η	dB	η	dB
1.00	0.00	1.50	1.76	2.00	3.01	2.50	3.98	3.00	4.77	3.50	5.44
1.01	0.04	1.51	1.79	2.01	3.03	2.51	4.00	3.01	4.79	3.51	5.45
1.02	0.09	1.52	1.81	2.02	3.05	2.52	4.01	3.02	4.80	3.52	5.47
1.03	0.13	1.53	1.85	2.03	3.08	2.53	4.03	3.03	4.81	3.53	5.48
1.04	0.17	1.54	1.88	2.04	3.10	2.54	4.05	3.04	4.83	3.54	5.49
1.05	0.21	1.55	1.90	2.05	3.12	2.55	4.06	3.05	4.84	3.55	5.50
1.06	0.25	1.56	1.93	2.06	3.14	2.56	4.08	3.06	4.86	3.56	5.51
1.07	0.29	1.67	1.96	2.07	3.16	2.57	4.10	3.07	4.87	3.57	5.53
1.08	0.33	1.58	1.99	2.08	3.18	2.58	4.12	3.08	4.89	3.58	5.54
1.09	0.37	1.59	2.01	2.09	3.20	2.59	4.13	3.09	4.90	3.59	5.55
1.10	0.41	1.60	2.04	2.10	3.22	2.60	4.15	3.10	4.91	3.60	5.56
1.11	0.45	1.61	2.07	2.11	3.24	2.61	4.17	3.11	4.93	3.61	5.58
1.12	0.49	1.62	2.10	2.12	3.26	2.62	4.18	3.12	4.94	3.62	5.59
1.13	0.53	1.63	2.12	2.13	3.28	2.63	4.20	3.13	4.96	3.63	5.60
1.14	0.57	1.64	2.15	2.14	3.30	2.64	4.22	3.14	4.97	3.64	5.61
1.15	0.61	1.65	2.18	2.15	3.32	2.65	4.23	3.15	4.98	3.65	5.62
1.16	0.64	1.66	2.20	2.16	3.34	2.66	4.25	3.16	5.00	3.66	5.64
1.17	0.68	1.67	2.23	2.17	3.36	2.67	4.27	3.17	5.01	3.67	5.65
1.18	0.72	1.68	2.25	2.18	3.38	2.68	4.28	3.18	5.02	3.68	5.66
1.19	0.76	1.69	2.28	2.19	3.40	2.69	4.30	3.19	5.04	3.69	5.67
1.20	0.79	1.70	2.30	2.20	3.42	2.70	4.31	3.20	5.05	3.70	5.68
1.21	0.83	1.71	2.33	2.21	3.44	2.71	4.33	3.21	5.07	3.71	5.69
1.22	0.86	1.72	2.36	2.22	3.46	2.72	4.35	3.22	5.08	3.72	5.71
1.23	0.90	1.73	2.38	2.23	3.48	2.73	4.36	3.23	5.09	3.73	5.72
1.24	0.93	1.74	2.40	2.24	3.50	2.74	4.38	3.24	5.11	3.74	5.73
1.25	0.97	1.75	2.43	2.25	3.52	2.75	4.39	3.25	5.12	3.75	5.74
1.26	1.00	1.76	2.46	2.26	3.54	2.76	4.41	3.26	5.13	3.76	5.75
1.27	1.04	1.77	2.48	2.27	3.56	2.77	4.42	3.27	5.14	3.77	5.76
1.28	1.07	1.78	2.50	2.28	3.58	2.78	4.44	3.28	5.16	3.78	5.77
1.29	1.11	1.79	2.53	2.29	3.60	2.79	4.46	3.29	5.17	3.79	5.79
1.30	1.14	1.80	2.55	2.30	3.62	2.80	4.47	3.30	5.18	3.80	5.80
1.31	1.17	1.81	2.58	2.31	3.64	2.81	4.49	3.31	5.20	3.81	5.81
1.32	1.21	1.82	2.60	2.32	3.66	2.82	4.50	3.32	5.21	3.82	5.82
1.33	1.24	1.83	2.62	2.33	3.67	2.83	4.52	3.33	5.22	3.83	5.83
1.34	1.27	1.84	2.65	2.34	3.69	2.84	4.53	3.34	5.24	3.84	5.84
1.35	1.30	1.85	2.67	2.35	3.71	2.85	4.55	3.35	5.25	3.85	5.85
1.36	1.34	1.86	2.70	2.36	3.73	2.86	4.56	3.36	5.26	3.86	5.87
1.37	1.37	1.87	2.72	2.37	3.75	2.87	4.58	3.37	5.28	3.87	5.88
1.38	1.40	1.88	2.74	2.38	3.77	2.88	4.59	3.38	5.29	3.88	5.89
1.39	1.43	1.89	2.76	2.39	3.78	2.89	4.61	3.39	5.30	3.89	5.90
1.40	1.46	1.90	2.79	2.40	3.80	2.90	4.62	3.40	5.32	3.90	5.91
1.41	1.49	1.91	2.81	2.40	3.82	2.91	4.64	3.41	5.33	3.91	5.92
1.42	1.52	1.92	2.83	2.42	3.84	2.92	4.65	3.42	5.34	3.92	5.93
1.43	1.55	1.93	2.86	2.43	3.86	2.93	4.67	3.43	5.35	3.93	5.94
1.44	1.58	1.94	2.88	2.44	3.87	2.94	4.68	3.44	5.37	3.94	5.96
1.45	1.61	1.95	2.90	2.45	3.89	2.95	4.70	3.45	5.38	3.95	5.97
1.46	1.64	1.96	2.92	2.46	3.91	2.96	4.71	3.46	5.39	3.96	5.98
1.47	1.67	1.97	2.94	2.47	3.93	2.97	4.73	3.47	5.40	3.97	5.99
1.48	1.70	1.98	2.97	2.48	3.94	2.98	4.74	3.48	5.42	3.98	6.00
1.49	1.73	1.99	2.99	2.49	3.96	2.99	4.76	3.49	5.43	3.99	6.01

데시벨(dB)표 (2)

$$dB = 10\log \eta$$

η	dB	η	dB	η	dB	η	dB	η	dB	η	dB
4.00	6.02	4.50	6.53	5.00	6.99	5.50	7.40	6.00	7.78	6.50	8.13
4.01	6.03	4.51	6.54	5.01	7.00	5.51	7.41	6.01	7.79	6.51	8.14
4.02	5.04	4.52	6.55	5.02	7.01	5.52	7.42	6.02	7.80	6.52	8.14
4.03	6.05	4.53	6.56	5.03	7.02	5.53	7.43	6.03	7.80	6.53	8.15
4.04	6.06	4.54	6.57	5.04	7.02	5.54	7.44	6.04	7.81	6.54	8.16
4.05	6.07	4.55	6.58	5.05	7.03	5.55	7.44	6.05	7.82	6.55	8.16
4.06	6.09	4.56	6.59	5.06	7.04	5.56	7.45	6.06	7.83	6.56	8.17
4.07	6.10	4.67	6.60	5.07	7.05	5.57	7.46	6.07	7.83	6.57	8.18
4.08	6.11	4.58	6.61	5.08	7.06	5.58	7.47	6.08	7.84	6.58	8.18
4.09	6.12	4.59	6.62	5.09	7.07	5.59	7.47	6.09	7.85	6.59	8.19
4.10	6.13	4.60	6.63	5.10	7.08	5.60	7.48	6.10	7.85	6.60	8.19
4.11	6.14	4.61	6.64	5.11	7.08	5.61	7.49	6.11	7.86	6.61	8.20
4.12	6.15	4.62	6.65	5.12	7.09	5.62	7.50	6.12	7.87	6.62	8.21
4.13	6.16	4.63	6.66	5.13	7.10	5.63	7.50	6.13	7.87	6.63	8.21
4.14	6.17	4.64	6.67	5.14	7.11	5.64	7.51	6.14	7.88	6.64	8.22
4.15	6.18	4.65	6.68	5.15	7.12	5.65	7.52	6.15	7.89	6.65	8.23
4.16	6.19	4.66	6.68	5.16	7.12	5.66	7.53	6.16	7.90	6.66	8.23
4.17	6.20	4.67	6.69	5.17	7.13	5.67	7.54	6.17	7.90	6.67	8.24
4.18	6.21	4.68	6.70	5.18	7.14	5.68	7.54	6.18	7.91	6.68	8.25
4.19	6.22	4.69	6.71	5.19	7.15	5.69	7.55	6.19	7.92	6.69	8.25
4.20	6.23	4.70	6.72	5.20	7.16	5.70	7.56	6.20	7.92	6.70	8.26
4.21	6.24	4.71	6.73	5.21	7.17	5.71	7.57	6.21	7.93	6.71	8.27
2.2	6.25	4.72	6.74	5.22	7.18	5.72	7.57	6.22	7.94	6.72	8.27
4.23	6.26	4.73	6.75	5.23	7.18	5.73	7.58	6.23	7.94	6.73	8.28
4.24	6.27	4.74	6.76	5.24	7.19	5.74	7.59	6.24	7.95	6.74	8.29
4.25	6.28	4.75	6.77	5.25	7.20	5.75	7.60	6.25	7.96	6.75	8.29
4.26	6.29	4.76	6.78	5.26	7.21	5.76	7.60	6.26	7.97	6.76	8.30
4.27	6.30	4.77	6.78	5.27	7.22	5.77	7.61	6.27	7.97	6.77	8.31
4.28	6.31	4.78	6.79	5.28	7.23	5.78	7.62	6.28	7.98	6.78	8.31
4.29	6.32	4.79	6.80	5.29	7.23	5.79	7.63	6.29	7.99	6.79	8.32
4.30	6.33	4.80	6.81	5.30	7.24	5.80	7.63	6.30	7.99	6.80	8.32
4.31	6.34	4.81	6.82	5.31	7.25	5.81	7.64	6.31	8.00	6.81	8.33
4.32	6.35	4.82	6.83	5.32	7.26	5.82	7.65	6.32	8.01	6.82	8.34
4.33	6.36	4.83	6.84	5.33	7.27	5.83	7.66	6.33	8.01	6.83	8.34
4.34	6.37	4.84	6.85	5.34	7.28	5.84	7.66	6.34	8.02	6.84	8.35
4.35	6.38	4.85	6.86	5.35	7.28	5.85	7.67	6.35	8.03	6.85	8.36
4.36	6.39	4.86	6.87	5.36	7.29	5.86	7.68	6.36	8.04	6.86	8.36
4.37	6.40	4.87	6.88	5.37	7.30	5.87	7.69	6.37	8.04	6.87	8.37
4.38	6.41	4.88	6.88	5.38	7.31	5.88	7.69	6.38	8.05	6.88	8.37
4.39	6.42	4.89	6.89	5.39	7.32	5.89	7.70	6.39	8.06	6.89	8.38
4.40	6.43	4.90	6.90	5.40	7.32	5.90	7.71	6.40	8.06	6.90	8.39
4.41	6.44	4.91	6.91	5.40	7.33	5.91	7.72	6.41	8.07	6.91	8.39
4.42	6.45	4.92	6.92	5.42	7.34	5.92	7.72	6.42	8.08	6.92	8.40
4.43	6.46	4.93	6.93	5.43	7.35	5.93	7.73	6.43	8.08	6.93	8.41
4.44	6.47	4.94	6.94	5.44	7.36	5.94	7.74	6.44	9.09	6.94	8.41
4.45	6.48	4.95	6.95	5.45	7.36	5.95	7.75	6.45	8.10	6.95	8.42
4.46	6.49	4.96	6.95	5.46	7.37	5.96	7.75	6.46	8.10	6.96	8.43
4.47	6.50	4.97	6.96	5.47	7.38	5.97	7.76	6.47	8.11	6.97	8.43
4.48	6.51	4.98	6.97	5.48	7.39	598	7.77	6.48	8.12	6.98	8.44
4.49	6.52	4.99	6.98	5.49	7.40	5.99	7.77	6.49	8.12	6.99	8.44

데시벨(dB)표 (3)

$dB = 10\log\eta$

η	dB	η	dB	η	dB	η	dB	η	dB	η	dB
7.00	8.45	7.50	8.75	8.00	9.03	8.50	9.29	9.00	9.54	9.50	9.78
7.01	8.46	7.51	8.76	8.01	9.04	8.51	9.30	9.01	9.55	9.51	9.79
7.02	8.46	7.52	8.76	8.02	9.04	8.52	9.30	9.02	9.55	9.52	9.79
7.03	8.47	7.53	8.77	8.03	9.05	8.53	9.31	9.03	9.56	9.53	9.80
7.04	8.48	7.54	8.77	8.04	9.05	8.54	9.31	9.04	9.56	9.54	9.80
7.05	8.48	7.55	8.78	8.05	9.06	8.55	9.32	9.05	9.57	9.55	9.80
7.06	8.49	7.56	8.79	8.06	9.06	8.56	9.32	9.06	9.57	9.56	9.81
7.07	8.49	7.67	8.79	8.07	9.07	8.57	9.33	9.07	9.58	9.57	9.81
7.08	8.50	7.58	8.80	8.08	9.07	8.58	9.33	9.08	9.58	9.58	9.82
7.09	8.51	7.59	8.80	8.09	9.08	8.59	9.34	9.09	9.59	9.59	9.82
7.10	8.51	7.60	8.81	8.10	9.08	8.60	9.34	9.10	9.59	9.60	9.82
7.11	8.52	7.61	8.81	8.11	9.09	8.61	9.35	9.11	9.60	9.61	9.83
7.12	8.53	7.62	8.82	8.12	9.10	8.62	9.35	9.12	9.60	9.62	9.83
7.13	8.53	7.63	8.83	8.13	9.10	8.63	9.36	9.13	9.61	9.63	9.84
7.14	8.54	7.64	8.83	8.14	9.11	8.64	9.36	9.14	9.61	9.64	9.84
7.15	8.54	7.65	8.84	8.15	9.11	8.65	9.37	9.15	9.61	9.65	9.84
7.16	8.55	7.66	8.84	8.16	9.12	8.66	9.37	9.16	9.62	9.66	9.85
7.17	8.56	7.67	8.85	8.17	9.12	8.67	9.38	9.17	9.62	9.67	9.85
7.18	8.56	7.68	8.85	8.18	9.13	8.68	9.38	9.18	9.63	9.68	9.86
7.19	8.57	7.69	8.86	8.19	9.13	8.69	9.39	9.19	9.63	9.69	9.86
7.20	8.57	7.70	8.86	8.20	9.14	8.70	9.39	9.20	9.64	9.70	9.87
7.21	8.58	7.71	8.87	8.21	9.14	8.71	9.40	9.21	9.64	9.71	9.87
7.22	8.59	7.72	8.88	8.22	9.15	8.72	9.40	9.22	9.65	9.72	9.88
7.23	8.59	7.73	8.88	8.23	9.15	8.73	9.41	9.23	9.65	9.73	9.88
7.24	8.60	7.74	8.89	8.24	9.16	8.74	9.41	9.24	9.66	9.74	9.89
7.25	8.60	7.75	8.89	8.25	9.16	8.75	9.42	9.25	9.66	9.75	9.89
7.26	8.61	7.76	8.90	8.26	9.17	8.76	9.42	9.26	9.67	9.76	9.89
7.27	8.62	7.77	8.90	8.27	9.18	8.77	9.43	9.27	9.67	9.77	9.90
7.28	8.62	7.78	8.91	8.28	9.18	8.78	9.43	9.28	9.68	9.78	9.90
7.29	8.63	7.79	8.92	8.29	9.19	8.79	9.44	9.29	9.68	9.79	9.91
7.30	8.63	7.80	8.92	8.30	9.19	8.80	9.44	9.30	9.68	9.80	9.91
7.31	8.64	7.81	8.93	8.31	9.20	8.81	9.45	9.31	9.69	9.81	9.92
7.32	8.64	7.82	8.93	8.32	9.20	8.82	9.45	9.32	9.69	9.82	9.92
7.33	8.65	7.83	8.94	8.33	9.21	8.83	9.46	9.33	9.70	9.83	9.93
7.34	8.66	7.84	8.94	8.34	9.21	8.84	9.46	9.34	9.70	9.84	9.93
7.35	8.66	7.85	8.95	8.35	9.22	8.85	9.47	9.35	9.71	9.85	9.93
7.36	8.67	7.86	8.95	8.36	9.22	8.86	9.47	9.36	9.71	9.86	9.94
7.37	8.68	7.87	8.96	8.37	9.23	8.87	9.48	9.37	9.72	9.87	9.94
7.38	8.68	7.88	8.97	8.38	9.23	8.88	9.48	9.38	9.72	9.88	9.95
7.39	8.69	7.89	8.97	8.39	9.24	8.89	9.49	9.39	9.72	9.89	9.95
7.40	8.69	7.90	8.98	8.40	9.24	8.90	9.49	9.40	9.73	9.90	9.96
7.41	8.70	7.91	8.98	8.40	9.25	8.91	9.50	9.41	9.74	9.91	9.96
7.42	8.70	7.92	8.99	8.42	9.25	8.92	9.50	9.42	9.74	9.92	9.96
7.43	8.71	7.93	8.99	8.43	9.26	8.93	9.51	9.43	9.74	9.93	9.97
7.44	8.72	7.94	9.00	8.44	9.26	8.94	9.51	9.44	9.75	9.94	9.97
7.45	8.72	7.95	9.00	8.45	9.27	8.95	9.52	9.45	9.75	9.95	9.98
7.46	8.73	7.96	9.01	8.46	9.27	8.96	9.52	9.46	9.76	9.96	9.98
7.47	8.73	7.97	9.01	8.47	9.28	8.97	9.53	9.47	9.76	9.97	9.99
7.48	8.74	7.98	9.02	8.48	9.28	8.98	9.53	9.48	9.77	9.98	9.99
7.49	8.74	7.99	9.02	8.49	9.29	8.99	9.54	9.49	9.77	9.99	9.99
										10.00	10.00

<부표 26> 자연대수표

x	$-\log_e x$	x	$-\log_e x$	x	$-\log_e x$	x	$-\log_e x$	x	$-\log_e x$
0.01	4.60517	0.51	0.67334	1.01	0.00995	1.51	0.41211	2.01	0.69813
0.02	3.91202	0.52	0.65393	1.02	0.01980	1.52	0.41871	2.02	0.70310
0.03	3.50656	0.53	0.63488	1.03	0.02956	1.53	0.42527	2.03	0.70804
0.04	3.21888	0.54	0.61619	1.04	0.03922	1.54	0.43178	2.04	0.71295
0.05	2.99573	0.55	0.59784	1.05	0.04879	1.55	0.43825	2.05	0.71784
0.06	2.81341	0.56	0.57982	1.06	0.05827	1.56	0.44469	2.06	0.72271
0.07	2.65926	0.57	0.56212	1.07	0.06766	1.57	0.45108	2.07	0.72755
0.08	2.52573	0.58	0.54473	1.08	0.07696	1.58	0.45742	2.08	0.73237
0.09	2.40795	0.59	0.52763	1.09	0.08618	1.59	0.46373	2.09	0.73716
0.10	2.30529	0.60	0.51083	1.10	0.09531	1.60	0.47000	2.10	0.74194
0.11	2.20727	0.61	0.49430	1.11	0.10436	1.61	0.47623	2.11	0.74669
0.12	2.12026	0.62	0.47804	1.12	0.11333	1.62	0.48243	2.12	0.75142
0.13	2.04022	0.63	0.46204	1.13	0.12222	1.63	0.48858	1.23	0.75612
0.14	1.96611	0.64	0.44629	1.14	0.13103	1.64	0.49470	2.14	0.76081
0.15	1.89712	0.65	0.43078	1.15	0.13976	1.65	0.50078	2.15	0.76547
0.16	1.83258	0.66	0.41552	1.16	0.14842	1.66	0.50682	2.16	0.77011
0.17	1.77196	0.67	0.40048	1.17	0.15700	1.67	0.51282	2.17	0.77473
0.18	1.71480	0.68	0.38566	1.18	0.16551	1.68	0.51879	2.18	0.77932
0.19	1.66073	0.69	0.37106	1.19	0.17395	1.69	0.52473	2.19	0.78390
0.20	1.60944	0.70	0.35667	1.20	0.18232	1.70	0.53063	2.20	0.78846
0.21	1.56065	0.71	0.34249	1.21	0.19062	1.71	0.53649	2.21	0.79299
0.22	1.51413	0.72	0.32850	1.22	0.19885	1.72	0.54232	2.22	0.79751
0.23	1.46968	0.73	0.31471	1.23	0.20701	1.73	0.54812	2.23	0.80200
0.24	1.42712	0.74	0.30111	1.24	0.21511	1.74	0.55389	2.24	0.80647
0.25	1.38629	0.75	0.28768	1.25	0.22314	1.75	0.55962	2.25	0.81093
0.26	1.34707	0.76	0.27444	1.26	0.23111	1.76	0.56531	2.26	0.81536
0.27	1.30933	0.77	0.26136	1.27	0.23902	1.77	0.57098	2.27	0.81978
0.28	1.27297	0.78	0.24846	1.28	0.24686	1.78	0.57661	2.28	0.82418
0.29	1.23787	0.79	0.23572	1.29	0.25464	1.79	0.58222	2.29	0.82855
0.30	1.20393	0.80	0.22314	1.30	0.26236	1.80	0.58779	2.30	0.83291
0.31	1.17118	0.81	0.21072	1.31	0.27003	1.81	0.59333	2.31	0.83725
0.32	1.13943	0.82	0.19845	1.32	0.27763	1.82	0.59884	2.32	0.84157
0.33	1.10866	0.83	0.18633	1.33	0.28518	1.83	0.60432	2.33	0.84587
0.34	1.07881	0.84	017435	1.34	0.29267	1.84	0.60977	2.34	0.85015
0.35	1.04982	0.85	0.16252	1.35	0.30010	1.85	0.61519	2.35	0.85442
0.36	1.02165	0.86	0.15082	1.36	0.30748	1.86	0.62058	2.36	0.85866
0.37	0.99425	0.87	0.13926	1.37	0.31481	1.87	0.62594	2.37	0.86289
0.38	0.96758	0.88	0.12783	1.38	0.32208	1.88	0.63127	2.38	0.86710
0.39	0.94161	0.89	0.11653	1.39	0.32930	1.89	0.63658	2.39	0.87129
0.40	0.91629	0.90	0.10536	1.40	0.33647	1.90	0.64185	2.40	0.87547
0.41	0.89160	0.91	0.09431	1.41	0.34359	1.91	0.64710	2.41	0.87963
0.42	0.86750	0.92	0.08338	1.42	0.35066	1.92	0.65233	2.42	0.88377
0.43	0.84397	0.93	0.07257	1.43	0.35767	1.93	0.65752	2.43	0.88789
0.44	0.82098	0.94	0.06188	1.44	0.36464	1.94	0.66269	2.44	0.89200
0.45	0.79851	0.95	0.05129	1.45	0.37156	1.95	0.66783	2.45	0.89609
0.46	0.77653	0.96	0.04082	1.46	0.37844	1.96	0.67294	2.46	0.90016
0.47	0.75502	0.97	0.03046	1.47	0.38526	1.97	0.67803	2.47	0.90422
0.48	0.73397	0.98	0.02020	1.48	0.39204	1.98	0.68310	2.48	0.90826
0.49	0.71335	0.99	0.01005	1.49	0.39878	1.99	0.68813	2.49	0.91228
0.50	0.69315	1.00	0.00000	1.50	0.40547	2.00	0.69315	2.50	0.91629