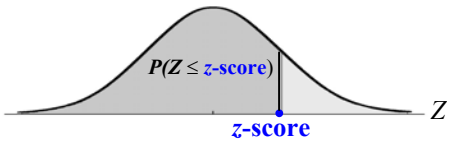
Cumulative Probabilities of the Standard Normal Distribution $N(0, 1)$



z-score	Left-sided area P(Z ≤ z-score)	z-score	Left-sided area P(Z ≤ z-score)	z-score	Left-sided area P(Z ≤ z-score)	z-score	Left-sided area P(Z ≤ z-score)	z-score	Left-sided area P(Z ≤ z-score)	z-score	Left-sided area P(Z ≤ z-score)
–4.26	0.00001	–3.55	0.00019	–2.84	0.00226	–2.13	0.01659	–1.42	0.07780	–0.71	0.23885
–4.25	0.00001	–3.54	0.00020	–2.83	0.00233	–2.12	0.01700	–1.41	0.07927	–0.70	0.24196
–4.24	0.00001	–3.53	0.00021	–2.82	0.00240	–2.11	0.01743	–1.40	0.08076	–0.69	0.24510
–4.23	0.00001	–3.52	0.00022	–2.81	0.00248	–2.10	0.01786	–1.39	0.08226	–0.68	0.24825
–4.22	0.00001	–3.51	0.00022	–2.80	0.00256	–2.09	0.01831	–1.38	0.08379	–0.67	0.25143
–4.21	0.00001	–3.50	0.00023	–2.79	0.00264	–2.08	0.01876	–1.37	0.08534	–0.66	0.25463
–4.20	0.00001	–3.49	0.00024	–2.78	0.00272	–2.07	0.01923	–1.36	0.08691	–0.65	0.25785
–4.19	0.00001	–3.48	0.00025	–2.77	0.00280	–2.06	0.01970	–1.35	0.08851	–0.64	0.26109
–4.18	0.00001	–3.47	0.00026	–2.76	0.00289	–2.05	0.02018	–1.34	0.09012	–0.63	0.26435
–4.17	0.00002	–3.46	0.00027	–2.75	0.00298	–2.04	0.02068	–1.33	0.09176	–0.62	0.26763
–4.16	0.00002	–3.45	0.00028	–2.74	0.00307	–2.03	0.02118	–1.32	0.09342	–0.61	0.27093
–4.15	0.00002	–3.44	0.00029	–2.73	0.00317	–2.02	0.02169	–1.31	0.09510	–0.60	0.27425
–4.14	0.00002	–3.43	0.00030	–2.72	0.00326	–2.01	0.02222	–1.30	0.09680	–0.59	0.27760
–4.13	0.00002	–3.42	0.00031	–2.71	0.00336	–2.00	0.02275	–1.29	0.09853	–0.58	0.28096
–4.12	0.00002	–3.41	0.00032	–2.70	0.00347	–1.99	0.02330	–1.28	0.10027	–0.57	0.28434
–4.11	0.00002	–3.40	0.00034	–2.69	0.00357	–1.98	0.02385	–1.27	0.10204	–0.56	0.28774
–4.10	0.00002	–3.39	0.00035	–2.68	0.00368	–1.97	0.02442	–1.26	0.10383	–0.55	0.29116
–4.09	0.00002	–3.38	0.00036	–2.67	0.00379	–1.96	0.02500	–1.25	0.10565	–0.54	0.29460
–4.08	0.00002	–3.37	0.00038	–2.66	0.00391	–1.95	0.02559	–1.24	0.10749	–0.53	0.29806
–4.07	0.00002	–3.36	0.00039	–2.65	0.00402	–1.94	0.02619	–1.23	0.10935	–0.52	0.30153
–4.06	0.00002	–3.35	0.00040	–2.64	0.00415	–1.93	0.02680	–1.22	0.11123	–0.51	0.30503
–4.05	0.00003	–3.34	0.00042	–2.63	0.00427	–1.92	0.02743	–1.21	0.11314	–0.50	0.30854
–4.04	0.00003	–3.33	0.00043	–2.62	0.00440	–1.91	0.02807	–1.20	0.11507	–0.49	0.31207
–4.03	0.00003	–3.32	0.00045	–2.61	0.00453	–1.90	0.02872	–1.19	0.11702	–0.48	0.31561
–4.02	0.00003	–3.31	0.00047	–2.60	0.00466	–1.89	0.02938	–1.18	0.11900	–0.47	0.31918
–4.01	0.00003	–3.30	0.00048	–2.59	0.00480	–1.88	0.03005	–1.17	0.12100	–0.46	0.32276
–4.00	0.00003	–3.29	0.00050	–2.58	0.00494	–1.87	0.03074	–1.16	0.12302	–0.45	0.32636
–3.99	0.00003	–3.28	0.00052	–2.57	0.00508	–1.86	0.03144	–1.15	0.12507	–0.44	0.32997
–3.98	0.00003	–3.27	0.00054	–2.56	0.00523	–1.85	0.03216	–1.14	0.12714	–0.43	0.33360
–3.97	0.00004	–3.26	0.00056	–2.55	0.00539	–1.84	0.03288	–1.13	0.12924	–0.42	0.33724
–3.96	0.00004	–3.25	0.00058	–2.54	0.00554	–1.83	0.03362	–1.12	0.13136	–0.41	0.34090
–3.95	0.00004	–3.24	0.00060	–2.53	0.00570	–1.82	0.03438	–1.11	0.13350	–0.40	0.34458
–3.94	0.00004	–3.23	0.00062	–2.52	0.00587	–1.81	0.03515	–1.10	0.13567	–0.39	0.34827
–3.93	0.00004	–3.22	0.00064	–2.51	0.00604	–1.80	0.03593	–1.09	0.13786	–0.38	0.35197
–3.92	0.00004	–3.21	0.00066	–2.50	0.00621	–1.79	0.03673	–1.08	0.14007	–0.37	0.35569
–3.91	0.00005	–3.20	0.00069	–2.49	0.00639	–1.78	0.03754	–1.07	0.14231	–0.36	0.35942
–3.90	0.00005	–3.19	0.00071	–2.48	0.00657	–1.77	0.03836	–1.06	0.14457	–0.35	0.36317
–3.89	0.00005	–3.18	0.00074	–2.47	0.00676	–1.76	0.03920	–1.05	0.14686	–0.34	0.36693
–3.88	0.00005	–3.17	0.00076	–2.46	0.00695	–1.75	0.04006	–1.04	0.14917	–0.33	0.37070
–3.87	0.00005	–3.16	0.00079	–2.45	0.00714	–1.74	0.04093	–1.03	0.15151	–0.32	0.37448
–3.86	0.00006	–3.15	0.00082	–2.44	0.00734	–1.73	0.04182	–1.02	0.15386	–0.31	0.37828
–3.85	0.00006	–3.14	0.00084	–2.43	0.00755	–1.72	0.04272	–1.01	0.15625	–0.30	0.38209
–3.84	0.00006	–3.13	0.00087	–2.42	0.00776	–1.71	0.04363	–1.00	0.15866	–0.29	0.38591
–3.83	0.00006	–3.12	0.00090	–2.41	0.00798	–1.70	0.04457	–0.99	0.16109	–0.28	0.38974
–3.82	0.00007	–3.11	0.00094	–2.40	0.00820	–1.69	0.04551	–0.98	0.16354	–0.27	0.39358
–3.81	0.00007	–3.10	0.00097	–2.39	0.00842	–1.68	0.04648	–0.97	0.16602	–0.26	0.39743
–3.80	0.00007	–3.09	0.00100	–2.38	0.00866	–1.67	0.04746	–0.96	0.16853	–0.25	0.40129
–3.79	0.00008	–3.08	0.00104	–2.37	0.00889	–1.66	0.04846	–0.95	0.17106	–0.24	0.40517
–3.78	0.00008	–3.07	0.00107	–2.36	0.00914	–1.65	0.04947	–0.94	0.17361	–0.23	0.40905
–3.77	0.00008	–3.06	0.00111	–2.35	0.00939	–1.64	0.05050	–0.93	0.17619	–0.22	0.41294
–3.76	0.00008	–3.05	0.00114	–2.34	0.00964	–1.63	0.05155	–0.92	0.17879	–0.21	0.41683
–3.75	0.00009	–3.04	0.00118	–2.33	0.00990	–1.62	0.05262	–0.91	0.18141	–0.20	0.42074
–3.74	0.00009	–3.03	0.00122	–2.32	0.01017	–1.61	0.05370	–0.90	0.18406	–0.19	0.42465
–3.73	0.00010	–3.02	0.00126	–2.31	0.01044	–1.60	0.05480	–0.89	0.18673	–0.18	0.42858
–3.72	0.00010	–3.01	0.00131	–2.30	0.01072	–1.59	0.05592	–0.88	0.18943	–0.17	0.43251
–3.71	0.00010	–3.00	0.00135	–2.29	0.01101	–1.58	0.05705	–0.87	0.19215	–0.16	0.43644
–3.70	0.00011	–2.99	0.00139	–2.28	0.01130	–1.57	0.05821	–0.86	0.19489	–0.15	0.44038
–3.69	0.00011	–2.98	0.00144	–2.27	0.01160	–1.56	0.05938	–0.85	0.19766	–0.14	0.44433
–3.68	0.00012	–2.97	0.00149	–2.26	0.01191	–1.55	0.06057	–0.84	0.20045	–0.13	0.44828
–3.67	0.00012	–2.96	0.00154	–2.25	0.01222	–1.54	0.06178	–0.83	0.20327	–0.12	0.45224
–3.66	0.00013	–2.95	0.00159	–2.24	0.01255	–1.53	0.06301	–0.82	0.20611	–0.11	0.45620
–3.65	0.00013	–2.94	0.00164	–2.23	0.01287	–1.52	0.06426	–0.81	0.20897	–0.10	0.46017
–3.64	0.00014	–2.93	0.00169	–2.22	0.01321	–1.51	0.06552	–0.80	0.21186	–0.09	0.46414
–3.63	0.00014	–2.92	0.00175	–2.21	0.01355	–1.50	0.06681	–0.79	0.21476	–0.08	0.46812
–3.62	0.00015	–2.91	0.00181	–2.20	0.01390	–1.49	0.06811	–0.78	0.21770	–0.07	0.47210
–3.61	0.00015	–2.90	0.00187	–2.19	0.01426	–1.48	0.06944	–0.77	0.22065	–0.06	0.47608
–3.60	0.00016	–2.89	0.00193	–2.18	0.01463	–1.47	0.07078	–0.76	0.22363	–0.05	0.48006
–3.59	0.00017	–2.88	0.00199	–2.17	0.01500	–1.46	0.07215	–0.75	0.22663	–0.04	0.48405
–3.58	0.00017	–2.87	0.00205	–2.16	0.01539	–1.45	0.07353	–0.74	0.22965	–0.03	0.48803
–3.57	0.00018	–2.86	0.00212	–2.15	0.01578	–1.44	0.07493	–0.73	0.23270	–0.02	0.49202
–3.56	0.00019	–2.85	0.00219	–2.14	0.01618	–1.43	0.07636	–0.72	0.23576	–0.01	0.49601

0.00	**0.50000**	+0.73	0.76730	+1.46	0.92785	+2.19	0.98574	+2.92	0.99825	+3.65	0.99987
+0.01	0.50399	+0.74	0.77035	+1.47	0.92922	+2.20	0.98610	+2.93	0.99831	+3.66	0.99987
+0.02	0.50798	+0.75	0.77337	+1.48	0.93056	+2.21	0.98645	+2.94	0.99836	+3.67	0.99988
+0.03	0.51197	+0.76	0.77637	+1.49	0.93189	+2.22	0.98679	+2.95	0.99841	+3.68	0.99988
+0.04	0.51595	+0.77	0.77935	+1.50	0.93319	+2.23	0.98713	+2.96	0.99846	+3.69	0.99989
+0.05	0.51994	+0.78	0.78230	+1.51	0.93448	+2.24	0.98745	+2.97	0.99851	+3.70	0.99989
+0.06	0.52392	+0.79	0.78524	+1.52	0.93574	+2.25	0.98778	+2.98	0.99856	+3.71	0.99990
+0.07	0.52790	+0.80	0.78814	+1.53	0.93699	+2.26	0.98809	+2.99	0.99861	+3.72	0.99990
+0.08	0.53188	+0.81	0.79103	+1.54	0.93822	+2.27	0.98840	+3.00	0.99865	+3.73	0.99990
+0.09	0.53586	+0.82	0.79389	+1.55	0.93943	+2.28	0.98870	+3.01	0.99869	+3.74	0.99991
+0.10	0.53983	+0.83	0.79673	+1.56	0.94062	+2.29	0.98899	+3.02	0.99874	+3.75	0.99991
+0.11	0.54380	+0.84	0.79955	+1.57	0.94179	+2.30	0.98928	+3.03	0.99878	+3.76	0.99992
+0.12	0.54776	+0.85	0.80234	+1.58	0.94295	+2.31	0.98956	+3.04	0.99882	+3.77	0.99992
+0.13	0.55172	+0.86	0.80511	+1.59	0.94408	+2.32	0.98983	+3.05	0.99886	+3.78	0.99992
+0.14	0.55567	+0.87	0.80785	+1.60	0.94520	+2.33	0.99010	+3.06	0.99889	+3.79	0.99992
+0.15	0.55962	+0.88	0.81057	+1.61	0.94630	+2.34	0.99036	+3.07	0.99893	+3.80	0.99993
+0.16	0.56356	+0.89	0.81327	+1.62	0.94738	+2.35	0.99061	+3.08	0.99896	+3.81	0.99993
+0.17	0.56749	+0.90	0.81594	+1.63	0.94845	+2.36	0.99086	+3.09	0.99900	+3.82	0.99993
+0.18	0.57142	+0.91	0.81859	+1.64	0.94950	+2.37	0.99111	+3.10	0.99903	+3.83	0.99994
+0.19	0.57535	+0.92	0.82121	+1.65	0.95053	+2.38	0.99134	+3.11	0.99906	+3.84	0.99994
+0.20	0.57926	+0.93	0.82381	+1.66	0.95154	+2.39	0.99158	+3.12	0.99910	+3.85	0.99994
+0.21	0.58317	+0.94	0.82639	+1.67	0.95254	+2.40	0.99180	+3.13	0.99913	+3.86	0.99994
+0.22	0.58706	+0.95	0.82894	+1.68	0.95352	+2.41	0.99202	+3.14	0.99916	+3.87	0.99995
+0.23	0.59095	+0.96	0.83147	+1.69	0.95449	+2.42	0.99224	+3.15	0.99918	+3.88	0.99995
+0.24	0.59483	+0.97	0.83398	+1.70	0.95543	+2.43	0.99245	+3.16	0.99921	+3.89	0.99995
+0.25	0.59871	+0.98	0.83646	+1.71	0.95637	+2.44	0.99266	+3.17	0.99924	+3.90	0.99995
+0.26	0.60257	+0.99	0.83891	+1.72	0.95728	+2.45	0.99286	+3.18	0.99926	+3.91	0.99995
+0.27	0.60642	+1.00	0.84134	+1.73	0.95818	+2.46	0.99305	+3.19	0.99929	+3.92	0.99996
+0.28	0.61026	+1.01	0.84375	+1.74	0.95907	+2.47	0.99324	+3.20	0.99931	+3.93	0.99996
+0.29	0.61409	+1.02	0.84614	+1.75	0.95994	+2.48	0.99343	+3.21	0.99934	+3.94	0.99996
+0.30	0.61791	+1.03	0.84849	+1.76	0.96080	+2.49	0.99361	+3.22	0.99936	+3.95	0.99996
+0.31	0.62172	+1.04	0.85083	+1.77	0.96164	+2.50	0.99379	+3.23	0.99938	+3.96	0.99996
+0.32	0.62552	+1.05	0.85314	+1.78	0.96246	+2.51	0.99396	+3.24	0.99940	+3.97	0.99996
+0.33	0.62930	+1.06	0.85543	+1.79	0.96327	+2.52	0.99413	+3.25	0.99942	+3.98	0.99997
+0.34	0.63307	+1.07	0.85769	+1.80	0.96407	+2.53	0.99430	+3.26	0.99944	+3.99	0.99997
+0.35	0.63683	+1.08	0.85993	+1.81	0.96485	+2.54	0.99446	+3.27	0.99946	+4.00	0.99997
+0.36	0.64058	+1.09	0.86214	+1.82	0.96562	+2.55	0.99461	+3.28	0.99948	+4.01	0.99997
+0.37	0.64431	+1.10	0.86433	+1.83	0.96638	+2.56	0.99477	+3.29	0.99950	+4.02	0.99997
+0.38	0.64803	+1.11	0.86650	+1.84	0.96712	+2.57	0.99492	+3.30	0.99952	+4.03	0.99997
+0.39	0.65173	+1.12	0.86864	+1.85	0.96784	+2.58	0.99506	+3.31	0.99953	+4.04	0.99997
+0.40	0.65542	+1.13	0.87076	+1.86	0.96856	+2.59	0.99520	+3.32	0.99955	+4.05	0.99997
+0.41	0.65910	+1.14	0.87286	+1.87	0.96926	+2.60	0.99534	+3.33	0.99957	+4.06	0.99998
+0.42	0.66276	+1.15	0.87493	+1.88	0.96995	+2.61	0.99547	+3.34	0.99958	+4.07	0.99998
+0.43	0.66640	+1.16	0.87698	+1.89	0.97062	+2.62	0.99560	+3.35	0.99960	+4.08	0.99998
+0.44	0.67003	+1.17	0.87900	+1.90	0.97128	+2.63	0.99573	+3.36	0.99961	+4.09	0.99998
+0.45	0.67364	+1.18	0.88100	+1.91	0.97193	+2.64	0.99585	+3.37	0.99962	+4.10	0.99998
+0.46	0.67724	+1.19	0.88298	+1.92	0.97257	+2.65	0.99598	+3.38	0.99964	+4.11	0.99998
+0.47	0.68082	+1.20	0.88493	+1.93	0.97320	+2.66	0.99609	+3.39	0.99965	+4.12	0.99998
+0.48	0.68439	+1.21	0.88686	+1.94	0.97381	+2.67	0.99621	+3.40	0.99966	+4.13	0.99998
+0.49	0.68793	+1.22	0.88877	+1.95	0.97441	+2.68	0.99632	+3.41	0.99968	+4.14	0.99998
+0.50	0.69146	+1.23	0.89065	+1.96	0.97500	+2.69	0.99643	+3.42	0.99969	+4.15	0.99998
+0.51	0.69497	+1.24	0.89251	+1.97	0.97558	+2.70	0.99653	+3.43	0.99970	+4.16	0.99998
+0.52	0.69847	+1.25	0.89435	+1.98	0.97615	+2.71	0.99664	+3.44	0.99971	+4.17	0.99998
+0.53	0.70194	+1.26	0.89617	+1.99	0.97670	+2.72	0.99674	+3.45	0.99972	+4.18	0.99999
+0.54	0.70540	+1.27	0.89796	+2.00	0.97725	+2.73	0.99683	+3.46	0.99973	+4.19	0.99999
+0.55	0.70884	+1.28	0.89973	+2.01	0.97778	+2.74	0.99693	+3.47	0.99974	+4.20	0.99999
+0.56	0.71226	+1.29	0.90147	+2.02	0.97831	+2.75	0.99702	+3.48	0.99975	+4.18	0.99999
+0.57	0.71566	+1.30	0.90320	+2.03	0.97882	+2.76	0.99711	+3.49	0.99976	+4.19	0.99999
+0.58	0.71904	+1.31	0.90490	+2.04	0.97932	+2.77	0.99720	+3.50	0.99977	+4.20	0.99999
+0.59	0.72240	+1.32	0.90658	+2.05	0.97982	+2.78	0.99728	+3.51	0.99978	+4.21	0.99999
+0.60	0.72575	+1.33	0.90824	+2.06	0.98030	+2.79	0.99736	+3.52	0.99978	+4.22	0.99999
+0.61	0.72907	+1.34	0.90988	+2.07	0.98077	+2.80	0.99744	+3.53	0.99979	+4.23	0.99999
+0.62	0.73237	+1.35	0.91149	+2.08	0.98124	+2.81	0.99752	+3.54	0.99980	+4.24	0.99999
+0.63	0.73565	+1.36	0.91309	+2.09	0.98169	+2.82	0.99760	+3.55	0.99981	+4.25	0.99999
+0.64	0.73891	+1.37	0.91466	+2.10	0.98214	+2.83	0.99767	+3.56	0.99981	+4.26	0.99999
+0.65	0.74215	+1.38	0.91621	+2.11	0.98257	+2.84	0.99774	+3.57	0.99982	+4.27	0.99999
+0.66	0.74537	+1.39	0.91774	+2.12	0.98300	+2.85	0.99781	+3.58	0.99983	+4.28	0.99999
+0.67	0.74857	+1.40	0.91924	+2.13	0.98341	+2.86	0.99788	+3.59	0.99983	+4.29	0.99999
+0.68	0.75175	+1.41	0.92073	+2.14	0.98382	+2.87	0.99795	+3.60	0.99984	+4.30	0.99999
+0.69	0.75490	+1.42	0.92220	+2.15	0.98422	+2.88	0.99801	+3.61	0.99985	+4.31	0.99999
+0.70	0.75804	+1.43	0.92364	+2.16	0.98461	+2.89	0.99807	+3.62	0.99985	+4.32	0.99999
+0.71	0.76115	+1.44	0.92507	+2.17	0.98500	+2.90	0.99813	+3.63	0.99986	+4.33	0.99999
+0.72	0.76424	+1.45	0.92647	+2.18	0.98537	+2.91	0.99819	+3.64	0.99986	+4.34	0.99999

Note: To linearly interpolate for "in-between" values, solve $(z_{above} - z_{below})(P_{between} - P_{below}) = (z_{between} - z_{below})(P_{above} - P_{below})$ for either $z_{between}$ or $P_{between}$, whichever required, given the other.

Right-sided area: $P(Z \geq z\text{-score}) = 1 - \text{Left-sided area}$

Interval area: $P(a \leq Z \leq b) = P(Z \leq b) - P(Z \leq a)$