

Spreadsheet Formulas for the Wilcoxon Rank Sum Test and Power Calculation

Wilcoxon Rank Sum Test, per NUREG-1505

LBGR 13.3 (For this calculation, LBGR = 3w for 2002 Igloo Background)
(Reference Dataset - 2002 Igloo Alpha Phoswich)

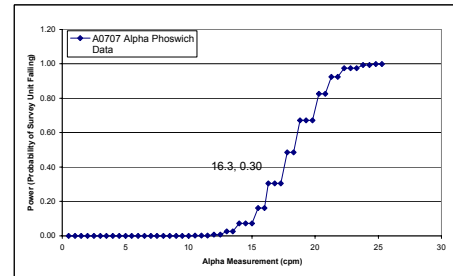
DATA	AREA	ADJUSTED DATA	RANKS	SURVEY AREA RANKS	
13	R	13	167.5	0	
17	R	17	176	0	
12	R	12	165	0	
4	R	4	134	0	
18	R	18	177	0	
9	R	9	160	0	
8	R	8	157	0	
16	R	16	174.5	0	
4	R	4	134	0	
7	R	7	154.5	0	
4	R	4	134	0	
9	R	9	160	0	
14	R	14	169.5	0	
5	R	5	144.5	0	
14	R	14	169.5	0	
12	R	12	165	0	
16	R	16	174.5	0	
11	R	11	162.5	0	
15	R	15	172	0	
6	R	6	152	0	
5	R	5	144.5	0	
4	R	4	134	0	
1	R	1	59.5	0	
9	R	9	160	0	
12	R	12	165	0	
15	R	15	172	0	
15	R	15	172	0	
6	R	6	152	0	
111	R	111	180	0	
8	R	8	157	0	
3	R	3	114.5	0	
3	R	3	114.5	0	
3	R	3	114.5	0	
4	R	4	134	0	
6	R	6	152	0	
11	R	11	162.5	0	
5	R	5	144.5	0	
5	R	5	144.5	0	
3	R	3	114.5	0	
2	R	2	86	0	
3	R	3	114.5	0	
4	R	4	134	0	
4	R	4	134	0	
5	R	5	144.5	0	
3	R	3	114.5	0	
5	R	5	144.5	0	
2	R	2	86	0	
2	R	2	86	0	
5	R	5	144.5	0	
5	R	5	144.5	0	
3	R	3	114.5	0	
2	R	2	86	0	
5	R	5	144.5	0	
8	R	8	157	0	
2	R	2	86	0	
3	R	3	114.5	0	
86	R	86	179	0	
2	R	2	86	0	
1	R	1	59.5	0	
5	R	5	144.5	0	
3	R	3	114.5	0	
1	R	1	59.5	0	
2	R	2	86	0	
0	R	0	38.5	0	
0	R	0	38.5	0	
2	R	2	86	0	
1	R	1	59.5	0	
2	R	2	86	0	
3	R	3	114.5	0	
1	R	1	59.5	0	
0	R	0	38.5	0	
0	R	0	38.5	0	
2	R	2	86	0	
0	R	0	38.5	0	
0	R	0	38.5	0	
1	R	1	59.5	0	
0	R	0	38.5	0	
1	R	1	59.5	0	
0	R	0	38.5	0	
0	R	0	38.5	0	
3	R	3	114.5	0	
3	R	3	114.5	0	
1	R	1	59.5	0	
2	R	2	86	0	
1	R	1	59.5	0	
3	R	3	114.5	0	
13	R	13	167.5	0	
3	R	3	114.5	0	
2	R	2	86	0	
1	R	1	59.5	0	
2	R	2	86	0	

Survey Unit Stats	Count	SD	Median	Reference Stats	Count	SD	Median	Critical Value	Bkgd Median plus LBGR
Count	30	3	2	150	12	3	3	3225.6	16.3
SD	1	1	1	1	1	1	1	1	1
Median	1	1	1	1	1	1	1	1	1
Reference Stats	1	1	1	1	1	1	1	1	1
Count	150	12	3	3225.6	16.3	1	1	1	1
SD	1	1	1	1	1	1	1	1	1
Median	1	1	1	1	1	1	1	1	1
Critical Value	3225.6	16.3	1	1	1	1	1	1	1
Bkgd Median plus LBGR	16.3	1	1	1	1	1	1	1	1

Retrospective Power Curve Calculator

From Example in Section 10.5 of NUREG-1505

p1 and p2 pull data from Table 10-3 sheet



Based on the number of measurements and the observed standard deviation, a survey unit with a median measurement equal to the background median plus the LBGR (16.3) will have a 0.30 probability that the survey unit will correctly fail (i.e., the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR [i.e., the survey unit is indistinguishable from background] is rejected).

3	R	3	114.5	0
3	R	3	114.5	0
3	R	3	114.5	0
3	R	3	114.5	0
2	R	2	86	0
0	R	0	38.5	0
2	R	2	86	0
2	R	2	86	0
1	R	1	59.5	0
0	R	0	38.5	0
3	R	3	114.5	0
1	R	1	59.5	0
1	R	1	59.5	0
0	R	0	38.5	0
1	R	1	59.5	0
2	R	2	86	0
3	R	3	114.5	0
2	R	2	86	0
1	R	1	59.5	0
2	R	2	86	0
3	R	3	114.5	0
4	R	4	134	0
3	R	3	114.5	0
1	R	1	59.5	0
3	R	3	114.5	0
5	R	5	144.5	0
3	R	3	114.5	0
3	R	3	114.5	0
1	R	1	59.5	0
2	R	2	86	0
2	R	2	86	0
3	R	3	114.5	0
1	R	1	59.5	0
2	R	2	86	0
4	R	4	134	0
2	R	2	86	0
2	R	2	86	0
2	R	2	86	0
1	R	1	59.5	0
0	R	0	38.5	0
1	R	1	59.5	0
3	R	3	114.5	0
1	R	1	59.5	0
7	R	7	154.5	0
0	R	0	38.5	0
2	R	2	86	0
1	R	1	59.5	0
2	R	2	86	0
0	R	0	38.5	0
0	R	0	38.5	0
1	R	1	59.5	0
2	R	2	86	0
1	R	1	59.5	0
0	R	0	38.5	0
0	R	0	38.5	0
34	R	34	178	0
3	R	3	114.5	0
0	S	-13.3	1.5	1.5
3	S	-10.3	22.5	22.5
7	S	-6.3	28	28
2	S	-11.3	15.5	15.5
1	S	-12.3	6.5	6.5
6	S	-7.3	27	27
3	S	-10.3	22.5	22.5
2	S	-11.3	15.5	15.5
2	S	-11.3	15.5	15.5
1	S	-12.3	6.5	6.5
0	S	-13.3	1.5	1.5
8	S	-5.3	29	29
4	S	-9.3	25.5	25.5
2	S	-11.3	15.5	15.5
2	S	-11.3	15.5	15.5
1	S	-12.3	6.5	6.5
1	S	-12.3	6.5	6.5
1	S	-12.3	6.5	6.5
2	S	-11.3	15.5	15.5
3	S	-10.3	22.5	22.5
2	S	-11.3	15.5	15.5
4	S	-9.3	25.5	25.5
1	S	-12.3	6.5	6.5
2	S	-11.3	15.5	15.5
2	S	-11.3	15.5	15.5
2	S	-11.3	15.5	15.5
3	S	-10.3	22.5	22.5
17	S	3.7	129	129
1	S	-12.3	6.5	6.5
Sum =			16290	564

* This spreadsheet is originally designed to work with a set of twenty measurements, 10 from the survey unit (S) and 10 from the background reference area (R).
If a different number of measurements have been performed, it is necessary to modify the spreadsheet to account for the change in the number of measurements.

of R: 150 n
of S: 30 m
Avg Rank R: 105
Avg Rank S: 19

For m or n greater than 20, the critical value (k) can be calculated for Scenario B from

$$\frac{m(n+m+1)}{2} \pm \sqrt{\frac{nm(n+m+1)}{12}}$$

$z = 97.5\%$ percentile of standard normal distribution = 1.960

$$k = 3225.6$$

Since the sum of survey unit ranks is less than the critical value, the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR (i.e., the survey unit is indistinguishable from background) is accepted and the survey unit passes. *Scenario B*

For ties, per equation from NUREG-1505, Table A.4

k = 3225.5 No significant difference accounting for ties

[illegible]

[illegible]

177
178
179
180

Spreadsheet Formulas for the Wilcoxon Rank Sum Test and Power Calculation

Wilcoxon Rank Sum Test, per NUREG-1505

LBGR 40.5 (For this calculation, LBGR = 3w for 2002 Igloo Background)

(Reference Dataset - 2002 Igloo Beta Phoswich)

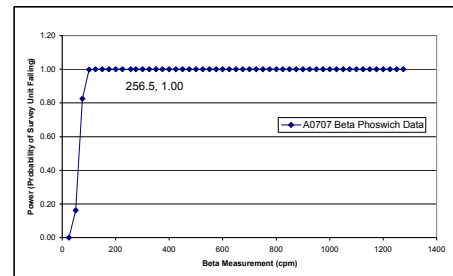
DATA	AREA	ADJUSTED DATA	RANKS	SURVEY AREA RANKS
234 R		234	129.5	0
255 R		255	152	0
272 R		272	160.5	0
206 R		206	86	0
283 R		283	168	0
199 R		199	70.5	0
235 R		235	131	0
202 R		202	77	0
220 R		220	105.5	0
215 R		215	96.5	0
183 R		183	49.5	0
225 R		225	113	0
213 R		213	93	0
243 R		243	138	0
203 R		203	79	0
252 R		252	149	0
197 R		197	65	0
226 R		226	114.5	0
220 R		220	105.5	0
181 R		181	46.5	0
222 R		222	108	0
231 R		231	123.5	0
241 R		241	136	0
228 R		228	117	0
277 R		277	165	0
260 R		260	157	0
387 R		387	178	0
216 R		216	100	0
596 R		596	180	0
163 R		163	25	0
155 R		155	17	0
171 R		171	35.5	0
228 R		228	117	0
196 R		196	62.5	0
237 R		237	133	0
172 R		172	37.5	0
253 R		253	150.5	0
216 R		216	100	0
191 R		191	60	0
231 R		231	123.5	0
204 R		204	81	0
231 R		231	123.5	0
162 R		162	21.5	0
171 R		171	35.5	0
197 R		197	65	0
246 R		246	141	0
166 R		166	25	0
198 R		198	68	0
169 R		169	32.5	0
162 R		162	21.5	0
256 R		256	153	0
233 R		233	127.5	0
179 R		179	41.5	0
260 R		260	157	0
248 R		248	144.5	0
212 R		212	92	0
211 R		211	91	0
229 R		229	119.5	0
430 R		430	179	0
134 R		134	7	0
334 R		334	173	0
168 R		168	30	0
205 R		205	83	0
170 R		170	34	0
210 R		210	90	0
274 R		274	163	0
243 R		243	138	0
229 R		229	119.5	0
159 R		159	20	0
187 R		187	52.5	0
202 R		202	77	0
224 R		224	112	0
168 R		168	30	0
165 R		165	51	0
173 R		173	39	0
233 R		233	127.5	0
169 R		169	32.5	0
182 R		182	48	0
200 R		200	73.5	0
168 R		168	30	0
240 R		240	134	0
215 R		215	96.5	0
181 R		181	46.5	0
197 R		197	65	0
214 R		214	94.5	0
216 R		216	100	0
199 R		199	70.5	0
249 R		249	146	0
209 R		209	89	0
138 R		138	8	0
199 R		199	70.5	0
189 R		189	58	0
248 R		248	144.5	0

Survey Unit Stats	C	Measurement	(C-LBGR)/SD	Rounded	p1	p2	E(Wmw)	Var(Wmw)	SD(Wmw)	z	Power
Count	30 m	25	-0.254	-0.300	0.416002	0.253419	1872.009	66909.18	258.6681	3.43346	0.00
SD	61	50	0.156	0.200	0.556231	0.391392	2503.04	66268.01	251.2815	0.983981	0.16
Median	204	75	0.566	0.600	0.664313	0.513387	2989.409	60033.13	245.0166	-0.93574	0.83
Reference Stats		100	0.977	1.000	0.76025	0.633702	3421.125	46456.48	215.5377	-3.0667	1.00
Count	150 n	125	1.387	1.400	0.821015	0.716331	3694.568	35276.61	187.8207	-4.97513	1.00
SD		150	1.798	1.800	0.855334	0.810018	3984.003	21914.39	148.0351	-8.26741	1.00
Median	216	175	2.208	2.200	0.831218	0.881527	4190.481	12049.1	109.7684	-13.0306	1.00
		200	2.619	2.600	0.96145	0.931365	4326.525	5882.505	76.69749	-20.423	1.00
		225	3.029	3.000	0.979848	0.963118	4409.316	2558.876	50.58533	-32.6019	1.00
		256.5	3.546	3.500	0.991895	0.984758	4463.528	775.1679	27.84184	-61.181	1.00
		275	3.850	3.800	0.993336	0.987741	4470.012	597.6393	24.45075	-69.9314	1.00
		300	4.260	4.300	0.997661	0.995497	4489.475	149.3452	12.22069	-141.509	1.00
		325	4.671	4.700	0.997661	0.995497	4489.475	149.3452	12.22069	-141.509	1.00
		350	5.081	5.100	0.999796	0.999599	4499.082	6.616729	2.5723	-676.028	1.00
		375	5.491	5.500	0.999796	0.999599	4499.082	6.616729	2.5723	-676.028	1.00
		400	5.902	5.900	0.999796	0.999599	4499.082	6.616729	2.5723	-676.028	1.00
		425	6.312	6.300	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		450	6.723	6.700	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		475	7.133	7.100	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		500	7.544	7.500	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		525	7.954	8.000	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		550	8.364	8.400	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		575	8.775	8.800	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		600	9.185	9.200	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		625	9.596	9.600	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		650	10.006	10.000	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		675	10.417	10.400	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		700	10.827	10.800	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		725	11.237	11.200	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		750	11.648	11.600	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		775	12.058	12.100	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		800	12.469	12.500	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		825	12.879	12.900	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		850	13.290	13.300	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		875	13.700	13.700	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		900	14.110	14.100	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		925	14.521	14.500	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		950	14.931	14.900	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		975	15.342	15.300	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1000	15.752	15.800	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1025	16.163	16.200	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1050	16.573	16.600	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1075	16.983	17.000	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1100	17.394	17.400	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1125	17.804	17.800	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1150	18.215	18.200	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1175	18.625	18.600	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1200	19.036	19.000	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1225	19.446	19.400	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1250	19.856	19.900	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00
		1275	20.267	20.300	0.999989	0.999978	4499.951	0.0494	0.222262	-7827.77	1.00

Retrospective Power Curve Calculation

From Example in Section 10.5 of NUREG-1505

p1 and p2 pull data from Table 10-3 sheet



Based on the number of measurements and the observed standard deviation, a survey unit with a median measurement equal to the background median plus the LBGR (256.5) will have a 1.0 probability that the survey unit will correctly fail (i.e., the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR [i.e., the survey unit is indistinguishable from background] is rejected).

317	R	317	172	0
337	R	337	174	0
281	R	281	167	0
222	R	222	108	0
199	R	199	70.5	0
187	R	187	52.5	0
232	R	232	128	0
188	R	188	54.5	0
246	R	246	141	0
204	R	204	81	0
286	R	286	169.5	0
189	R	189	58	0
264	R	264	159	0
206	R	206	86	0
204	R	204	81	0
202	R	202	77	0
188	R	188	54.5	0
280	R	280	166	0
226	R	226	114.5	0
196	R	196	62.5	0
259	R	259	155	0
234	R	234	129.5	0
183	R	183	49.5	0
272	R	272	160.5	0
369	R	369	176	0
286	R	286	169.5	0
223	R	223	110.5	0
206	R	206	86	0
206	R	206	86	0
251	R	251	148	0
111	R	111	2	0
253	R	253	150.5	0
222	R	222	108	0
230	R	230	121	0
276	R	276	164	0
246	R	246	141	0
260	R	260	157	0
228	R	228	117	0
236	R	236	132	0
164	R	164	26	0
223	R	223	110.5	0
179	R	179	41.5	0
218	R	218	103	0
189	R	189	58	0
200	R	200	73.5	0
172	R	172	37.5	0
156	R	156	19	0
243	R	243	138	0
257	R	257	154	0
214	R	214	94.5	0
250	R	250	147	0
231	R	231	123.5	0
219	R	219	104	0
206	R	206	86	0
180	R	180	45	0
299	R	299	171	0
129	R	129	5	0
166	S	125.5	3	3
205	S	164.5	27	27
203	S	162.5	23.5	23.5
184	S	143.5	11	11
381	S	340.5	175	175
196	S	155.5	18	18
257	S	216.5	102	102
256	S	215.5	98	98
216	S	177.5	40	40
220	S	179.5	43.5	43.5
186	S	145.5	12	12
193	S	152.5	14	14
169	S	128.5	4	4
203	S	162.5	23.5	23.5
172	S	131.5	6	6
220	S	179.5	43.5	43.5
180	S	130.5	9	9
241	S	200.5	75	75
181	S	140.5	10	10
195	S	154.5	16	16
233	S	192.5	61	61
187	S	146.5	13	13
194	S	153.5	15	15
229	S	188.5	56	56
415	S	374.5	177	177
281	S	240.5	135	135
238	S	197.5	67	67
287	S	246.5	143	143
313	S	272.5	162	162
143	S	102.5	1	1
Sum =		16290	1584	

* This spreadsheet is originally designed to work with a set of twenty measurements, 10 from the survey unit (S) and 10 from the background reference area (R).
If a different number of measurements have been performed, it is necessary to modify the spreadsheet to account for the change in the number of measurements.

of R: 150 *n*
of S: 30 *m*
Avg Rank R: 98
Avg Rank S: 53

For m or n greater than 20, the critical value (k) can be calculated for Scenario B from

$$\frac{m(n+m+1)}{2} + z\sqrt{\frac{nm(n+m+1)}{12}}$$

z = 97.5% percentile of standard normal distribution = 1.960

$k = 3225.6$

Since the sum of survey unit ranks is less than the critical value, the null hypothesis that the difference between the survey unit median and the background median is less than the LSGR (i.e., the survey unit is indistinguishable from background) is accepted and the survey unit passes Scenario B

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59.5	R	58	R
59.5	R	58	R
59.5	R	60	R
59.5	R	61	S
59.5	R	62.5	R
59.5	R	62.5	R
59.5	R	65	R
59.5	R	65	R
59.5	R	65	R
59.5	R	67	S
59.5	R	68	R
59.5	R	70.5	R
59.5	R	70.5	R
59.5	R	70.5	R
86	R	70.5	R
86	R	73.5	R
86	R	73.5	R
86	R	75	S
86	R	77	R
86	R	77	R
86	R	77	R
86	R	79	R
86	R	81	R
86	R	81	R
86	R	81	R
86	R	83	R
86	R	86	R
86	R	86	R
86	R	86	R
86	R	86	R
86	R	86	R
86	R	86	R
86	R	89	R
86	R	90	R
86	R	91	R
86	R	92	R
86	R	93	R
86	R	94.5	R
86	R	94.5	R
86	R	96.5	R
86	R	96.5	R
86	R	98	S
86	R	100	R
86	R	100	R
114.5	R	100	R
114.5	R	102	S
114.5	R	103	R
114.5	R	104	R
114.5	R	105.5	R
114.5	R	105.5	R
114.5	R	108	R
114.5	R	108	R
114.5	R	108	R
114.5	R	110.5	R
114.5	R	110.5	R
114.5	R	112	R
114.5	R	113	R
114.5	R	114.5	R
114.5	R	114.5	R
114.5	R	117	R
114.5	R	117	R
114.5	R	117	R
114.5	R	119.5	R
114.5	R	119.5	R
114.5	R	121	R

114.5	R	123.5	R
114.5	R	123.5	R
114.5	R	123.5	R
114.5	R	123.5	R
114.5	R	126	R
114.5	R	127.5	R
114.5	R	127.5	R
129	S	129.5	R
134	R	129.5	R
134	R	131	R
134	R	132	R
134	R	133	R
134	R	134	R
134	R	135	S
134	R	136	R
134	R	138	R
134	R	138	R
144.5	R	138	R
144.5	R	141	R
144.5	R	141	R
144.5	R	141	R
144.5	R	143	S
144.5	R	144.5	R
144.5	R	144.5	R
144.5	R	146	R
144.5	R	147	R
144.5	R	148	R
144.5	R	149	R
144.5	R	150.5	R
152	R	150.5	R
152	R	152	R
152	R	153	R
154.5	R	154	R
154.5	R	155	R
157	R	157	R
157	R	157	R
157	R	157	R
160	R	159	R
160	R	160.5	R
160	R	160.5	R
162.5	R	162	S
162.5	R	163	R
165	R	164	R
165	R	165	R
165	R	166	R
167.5	R	167	R
167.5	R	168	R
169.5	R	169.5	R
169.5	R	169.5	R
172	R	171	R
172	R	172	R
172	R	173	R
174.5	R	174	R
174.5	R	175	S
176	R	176	R
177	R	177	S
178	R	178	R
179	R	179	R
180	R	180	R

0 of top 6 from S

2 of top 6 from S

If the r -th largest measurement is among a group of tied (equal-in-value) measurements, increase r to include the tied measurements. Also increase k by the same amount (EPA 230-R-94-004).

$r=7$

$k=5$

0 of top 7 from S

thesis is rejected.

Recreation of Table 10-3 from NUREG-1505

(C-LBGR)/SD	p1	p2
-6.0	0.00001	0
-5.0	0.000204	0.00001
-4.0	0.002339	0.000174
-3.5	0.006664	0.000738
-3.0	0.016947	0.00269
-2.5	0.03855	0.008465
-2.0	0.07865	0.023066
-1.9	0.089555	0.027714
-1.8	0.101546	0.033114
-1.7	0.114666	0.039348
-1.6	0.12895	0.046501
-1.5	0.144422	0.054656
-1.4	0.161099	0.063897
-1.3	0.178985	0.074301
-1.2	0.198072	0.085944
-1.1	0.218338	0.098892
-1.0	0.23975	0.113202
-0.9	0.262259	0.12892
-0.8	0.285804	0.146077
-0.7	0.310309	0.164691
-0.6	0.335687	0.18476
-0.5	0.361837	0.206266
-0.4	0.388649	0.229172
-0.3	0.416002	0.253419
-0.2	0.443769	0.27893
-0.1	0.471814	0.305606
0.0	0.5	0.333333
0.1	0.528186	0.361978
0.2	0.556231	0.391392
0.3	0.583998	0.421415
0.4	0.611351	0.451875
0.5	0.638163	0.482593
0.6	0.664313	0.513387
0.7	0.689691	0.544073
0.8	0.714196	0.574469
0.9	0.737741	0.604402
1.0	0.76025	0.633702
1.1	0.781662	0.662216
1.2	0.801928	0.6898
1.3	0.821015	0.716331
1.4	0.838901	0.741698
1.5	0.855578	0.765812
1.6	0.87105	0.788602
1.7	0.885334	0.810016
1.8	0.898454	0.830022
1.9	0.910445	0.848605
2.0	0.92135	0.865767
2.1	0.931218	0.881527
2.2	0.940103	0.895917
2.3	0.948062	0.908982
2.4	0.955157	0.920777
2.5	0.96145	0.931365
2.6	0.967004	0.940817
2.7	0.971881	0.949208
2.8	0.976143	0.956616
2.9	0.979848	0.963118
3.0	0.983053	0.968795
3.1	0.985811	0.973725
3.2	0.988174	0.977981
3.3	0.990188	0.981636
3.4	0.991895	0.984758
3.5	0.993336	0.98741
4.0	0.997661	0.995497
5.0	0.999796	0.999599
6.0	0.999989	0.999978