College of Science.
Department of Statistics & Operations Research

كلية العلوم
قسم الإحصاء وبحوث العمليات

Final Exam
Academic Year 1443-1444 Hijri- Third Semester

Exam Information معلومات الامتحان			
Course name	**Biostatistics (A)**		**اسم المقرر**
Course Code	**Stat 109**		**رمز المقرر**
Exam Date	**2023-06-11**	**1444-11-22**	**تاريخ الامتحان**
Exam Time	**01: 00 PM**		**وقت الامتحان**
Exam Duration	**2 hours**	**ساعتان**	**مدة الامتحان**
Classroom No.			**رقم قاعة الاختبار**
Instructor Name			**اسم استاذ المقرر**

Student Information معلومات الطالب		
Student's Name		**اسم الطالب**
ID number		**الرقم الجامعي**
Section No.		**رقم الشعبة**
Serial Number		**الرقم التسلسلي**

General Instructions: **تعليمات عامة:**

• Do not copy answers from your neighbors. They have different questions forms.	• لا تنسخ الإجابات من أصدقائك، لديهم نماذج أسئلة مختلفة.
• Choose the nearest number to your answer.	• اختر أقرب رقم لإجابتك.
• Do not use pencils or red pens.	• لا تستخدم أقلام الرصاص أو الأقلام الحمراء.
• Correction will be from cover page **only**.	• يجب نقل الاجابات بدقة ولن ينظر لورقة الأسئلة من الداخل.
• For each question, put the code (Capital Letters) of the correct answer in the following table beneath the question number	• لكل سؤال، ضع رمز (الحروف الكبيرة) للإجابة الصحيحة في الجدول التالي أسفل رقم السؤال.

This section is ONLY for instructor

#	Course Learning Outcomes (CLOs)	Related Questions	Points	Final Score
1	Confident interval about population parameter	1,5,6-9,14,18-21, 24, 25, 30,31,37	16	
2	Testing hypothesis about population parameter	2-4,10-13,15-17, 22,23 26-29, 32-36,38-40	24	40

1	2	3	4	5	6	7	8	9	10
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**

Choose the right answer for each question:

Questions(1 – 5) :

A medical student claims that the time of travel from hospital to the University by bus has an average of μ is greater than 27minutes. A sample of six ride-times (n=6) is taken from normal population to test the hypothesis of interest that produced $\bar{x}$ = 27.5 minutes and standard deviation s = 2.43 minutes, at α = 0.05

1) The point estimate of the population mean μ is

A)	27	B)	27.5	C)	2.43	D)	0.5

2) The hypotheses are

A)	$H_0 : \mu = 27$ vs $H_A : \mu \neq 27$	B)	$H_0 : \mu = 27$ vs $H_A : \mu < 27$
C)	$H_0 : \mu < 27$ vs $H_A : \mu = 27$	D)	$H_0 : \mu \leq 27$ vs $H_A : \mu > 27$

3) The value of the test statistic for testing this hypothesis is:

A)	Z=0.504	B)	Z = 0.460	C)	T = 0.504	D)	T = - 0.504

4) The decision is

A)	Reject H_0	B)	Accept H_0

5) The 99% upper limit of the population mean μ is

A)	30.84	B)	31.5	C)	23.5	D)	30.05

Questions(6 - 12) :

In a study of serum chemistry in healthy people, the following data were obtained for the serum concentration of uric acid in men and women aged 18–55 years.

Serum uric acid [mmol/I]

	Men	**Women**
Sample Size	$n_M = 53$	$n_W = 42$
Sample Mean	$\bar{X}_M = 0.354$	$\bar{X}_W = 0.263$

Suppose that the population standard deviations of uric acid are 0.058 and 0.051 for men and women respectively. Let μ_M represents the mean of serum concentration of uric acid in Men and μ_W represents the the mean of serum concentration of uric acid in Women.

6) The good point estimate for $\mu_M - \mu_W$ is

A)	0.091	B)	0.354	C)	0.263	D)	0.007

7) The margin of error of 95% confident interval of $\mu_M - \mu_W$ is

A)	$Z_{0.975}\sqrt{\frac{0.058^2}{53}+\frac{0.051^2}{42}}$	B)	$t_{0.975}\sqrt{\frac{0.058^2}{53}+\frac{0.051^2}{42}}$	C)	$Z_{0.975}\sqrt{\frac{0.058}{53}+\frac{0.051}{42}}$	D)	$t_{0.975}\sqrt{\frac{0.058}{53}+\frac{0.051}{42}}$

8) The 95% confidence interval of $\mu_M - \mu_W$ is

A)	(0.0512,0.1008)	B)	(0.0032,0.1852)	C)	(0.0691,0.1129)	D)	(0.0712,0.1208)

9) From the 95% confidence interval of $\mu_M - \mu_W$ we may conclude

A)	There is a difference between means of uric acid between Men and Women $\mu_M \neq \mu_W$	B)	There is no difference between means of uric acid between Men and Women $\mu_M = \mu_W$

➢ **Test $H_0: \mu_M - \mu_F \leq 0$ vs $H_A: \mu_M - \mu_F > 0$ at level of significance of 0.025.**

10) The value of the test statistic is:

A)	Z = 8.126	B)	T = 8.126	C)	T =1.894	D)	Z =1.894

11) The rejection region of the test is

A)	$(-\infty, -1.96)$	B)	$(1.96, \infty)$	C)	$(-\infty, 1.96)$	D)	(-1.96,1.96)

12) The decision is

A)	Reject H_0	B)	Accept H_0

Questions (13 - 19) :

An experiment was conducted to compare time duration of stay in a hospital with two types of complications (I) and (II). The results are given in the table below

	Sample Statistics for time duration	
	I	**II**
Mean	$12\ days$	$7\ days$
Standard deviation	$8\ days$	$5\ days$
Sample size	9	16

Assuming both populations are normally distributed with unknown equal variances, test the equality of population means at 0.01 level of significance.

13) The alternative hypothesis is:

A)	$H_A: \mu_1 \neq \mu_2$	B)	$H_A: \mu_1 > \mu_2$	C)	$H_A: \mu_1 \leq \mu_2$	D)	$H_A: \mu_1 = \mu_2$

14) The pooled estimate of the common variance (S_p^2) is:

A)	6.953	B)	38.565	C)	42.435	D)	6.043

15) The appropriate test statistic is:

A)	$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	B)	$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_P^2}{n_1} + \frac{s_P^2}{n_2}}}$	C)	$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$	D)	$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_P^2}{n_1} + \frac{s_P^2}{n_2}}}$

16) The value of test statistic is:

A)	1.932	B)	1.698	C)	4.562	D)	4.867

17) The decision is

A)	Reject H_0	B)	Accept H_0

18) The 99% confidence interval for the difference in mean times duration of stay in a hospital for two types of complications $\mu_1 - \mu_2$ is:

A)	(1.923, 8.077)	B)	(-2.263, 12.263)	C)	(-1.663 ,11.663)	D)	(-3.267, 13.267)

19) The width of the interval is

A)	6.154	B)	10	C)	14.53	D)	16.534

Questions (20 – 23):

The IQ test was administered to 5 girls before and after they were trained. The results are given as follows:

Candidates	1	2	3	4	5
IQ before training(X)	110	120	123	132	125
IQ after training(Y)	120	118	125	136	121
D =X -Y	-10	2	-2	- 4	4

20) The value of sample mean $\bar{D}$, and sample standard deviation S_D respectively are

A)	-2 and 3.28	B)	- 2 and 5.477	C)	2 and 5.477	D)	4.4 and 30

21) The 90% confidence interval for μ_D is

A)	(-3.222,7.222)	B)	(-6.029 ,2.029)	C)	(-7.222,3.222)	D)	(-5.756,1.756)

- **At $\alpha = 0.10$. Test $H_0: \mu_D = 0$ $against$ $H_A: \mu_D \neq 0$**

22) The value of test statistic

A)	0.817	B)	1.796	C)	- 1.363	D)	- 0.817

23) The decision is

A)	Reject H_0	B)	Accept H_0

Questions (24 – 29):

A commonly prescribed drug for relieving nervous tension (التوتر العصبي) is believed to be only 80% effective. Experimental results with a new drug administered to a random sample of 100 adults who were suffering from nervous tension show that 60 received relief. Is this sufficient evidence to conclude that the nervous tension of the new drug is less than 80% the one commonly prescribed at the 10% level of significance?

24) The point estimate of P is

A)	0.6	B)	0.8	C)	0.1	D)	0.05

25) The standard error of $\hat{p}$ is

A)	0.0489	B)	0.0024	C)	0.07	D)	0.60

26) The alternative hypothesis (H_A) is

A)	$p \neq 0.8$	B)	$p > 0.8$	C)	$p = 0.8$	D)	$p < 0.8$

27) The value of the test statistic is

A)	- 5	B)	5	C)	4	D)	- 4

28) The rejection region of the null hypothesis (H_0) is

A)	$Z > 1.285$	B)	$T > 1.645$	C)	$Z < - 1.645$	D)	$Z < - 1.285$

29) The decision is

A)	Reject H_0	B)	Accept H_0

Questions(30 - 36) :

Two types of medication for high blood pressure are being tested to determine if there is a difference in the proportions of adult patient reactions ,the results given in the following table

	Sample size	Number of adult patient with reactions (X)
medication A	200	20
medication B	200	12

30) The point estimate of the difference between two proportion P_A - P_B is

A)	0.04	B)	0.1	C)	0.06	D)	1

31) The upper limit of the 99% confident interval of P_A -P_B is

A)	0.1097	B)	-0.0297	C)	0.0436	D)	0.2164

- **Test H_0: $P_A - P_B = 0$ vs H_A: $P_A - P_B \neq 0$. Assume equal proportion with level of significant 0.01 . Then,**

32) The value of pooled proportion ($\bar{P}$) is

A)	32	B)	0.08	C)	0.02	D)	0.16

33) The value of the test statistic is

A)	1.4744	B)	0.1	C)	1.4142	D)	3.8042

34) The critical values are

A)	1.96 and -1.96	B)	1.645	C)	2.575 and -2.575	D)	1.725

35) The acceptance region of the H_0 is

A)	(-1.645, 1.645)	B)	(-2.575, 2.575)	C)	$(-\infty, -1.645) \cup (1.645, \infty)$	D)	$(-\infty, -2.575) \cup (2.575, \infty)$

36) The decision is

A)	Reject H_0	B)	Accept H_0

Questions(37 - 40) :

37) If the distribution of the random sample is normal and the standard deviation of the population is known, which type of confidence interval should be constructed?

A)	z-interval	B)	x-interval	C)	t-interval	D)	c-interval

38) If the P-value = 0.0625 and the value of α = 0.05 , then your decision is

A)	Reject H_0	B)	Accept H_0

39) The level of significance is

A)	The probability of rejecting H_A.	B)	The probability of accepting H_0.
C)	The probability of making a Type I error.	D)	The probability of making a Type II error.

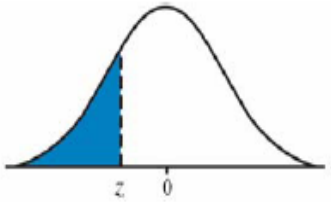
40) An appropriate 95% confidence interval for μ has been calculated as (-0.73, 1.92) based on $n_1 = 15, n_2 = 17$ observations from two independent populations with a normal distribution. The hypotheses of interest are H_0: $\mu_1 = \mu_2$ versus H_A: $\mu_1 \neq \mu_2$. Based on this confidence interval,

A)	We should reject H_0 at the $\alpha = 0.05$ level of significance.	B)	We should not reject H_0 at the $\alpha = 0.05$ level of significance.

END OF THE QUESTIONS

Standard Normal Table

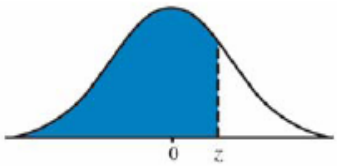
Areas Under the Standard Normal Curve



z	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.02	-0.01	-0.00	z
-3.50	0.00017	0.00017	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00022	0.00023	-3.50
-3.40	0.00024	0.00025	0.00026	0.00027	0.00028	0.00029	0.00030	0.00031	0.00032	0.00034	-3.40
-3.30	0.00035	0.00036	0.00038	0.00039	0.00040	0.00042	0.00043	0.00045	0.00047	0.00048	-3.30
-3.20	0.00050	0.00052	0.00054	0.00056	0.00058	0.00060	0.00062	0.00064	0.00066	0.00069	-3.20
-3.10	0.00071	0.00074	0.00076	0.00079	0.00082	0.00084	0.00087	0.00090	0.00094	0.00097	-3.10
-3.00	0.00100	0.00104	0.00107	0.00111	0.00114	0.00118	0.00122	0.00126	0.00131	0.00135	-3.00
-2.90	0.00139	0.00144	0.00149	0.00154	0.00159	0.00164	0.00169	0.00175	0.00181	0.00187	-2.90
-2.80	0.00193	0.00199	0.00205	0.00212	0.00219	0.00226	0.00233	0.00240	0.00248	0.00256	-2.80
-2.70	0.00264	0.00272	0.00280	0.00289	0.00298	0.00307	0.00317	0.00326	0.00336	0.00347	-2.70
-2.60	0.00357	0.00368	0.00379	0.00391	0.00402	0.00415	0.00427	0.00440	0.00453	0.00466	-2.60
-2.50	0.00480	0.00494	0.00508	0.00523	0.00539	0.00554	0.00570	0.00587	0.00604	0.00621	-2.50
-2.40	0.00639	0.00657	0.00676	0.00695	0.00714	0.00734	0.00755	0.00776	0.00798	0.00820	-2.40
-2.30	0.00842	0.00866	0.00889	0.00914	0.00939	0.00964	0.00990	0.01017	0.01044	0.01072	-2.30
-2.20	0.01101	0.01130	0.01160	0.01191	0.01222	0.01255	0.01287	0.01321	0.01355	0.01390	-2.20
-2.10	0.01426	0.01463	0.01500	0.01539	0.01578	0.01618	0.01659	0.01700	0.01743	0.01786	-2.10
-2.00	0.01831	0.01876	0.01923	0.01970	0.02018	0.02068	0.02118	0.02169	0.02222	0.02275	-2.00
-1.90	0.02330	0.02385	0.02442	0.02500	0.02559	0.02619	0.02680	0.02743	0.02807	0.02872	-1.90
-1.80	0.02938	0.03005	0.03074	0.03144	0.03216	0.03288	0.03362	0.03438	0.03515	0.03593	-1.80
-1.70	0.03673	0.03754	0.03836	0.03920	0.04006	0.04093	0.04182	0.04272	0.04363	0.04457	-1.70
-1.60	0.04551	0.04648	0.04746	0.04846	0.04947	0.05050	0.05155	0.05262	0.05370	0.05480	-1.60
-1.50	0.05592	0.05705	0.05821	0.05938	0.06057	0.06178	0.06301	0.06426	0.06552	0.06681	-1.50
-1.40	0.06811	0.06944	0.07078	0.07215	0.07353	0.07493	0.07636	0.07780	0.07927	0.08076	-1.40
-1.30	0.08226	0.08379	0.08534	0.08691	0.08851	0.09012	0.09176	0.09342	0.09510	0.09680	-1.30
-1.20	0.09853	0.10027	0.10204	0.10383	0.10565	0.10749	0.10935	0.11123	0.11314	0.11507	-1.20
-1.10	0.11702	0.11900	0.12100	0.12302	0.12507	0.12714	0.12924	0.13136	0.13350	0.13567	-1.10
-1.00	0.13786	0.14007	0.14231	0.14457	0.14686	0.14917	0.15151	0.15386	0.15625	0.15866	-1.00
-0.90	0.16109	0.16354	0.16602	0.16853	0.17106	0.17361	0.17619	0.17879	0.18141	0.18406	-0.90
-0.80	0.18673	0.18943	0.19215	0.19489	0.19766	0.20045	0.20327	0.20611	0.20897	0.21186	-0.80
-0.70	0.21476	0.21770	0.22065	0.22363	0.22663	0.22965	0.23270	0.23576	0.23885	0.24196	-0.70
-0.60	0.24510	0.24825	0.25143	0.25463	0.25785	0.26109	0.26435	0.26763	0.27093	0.27425	-0.60
-0.50	0.27760	0.28096	0.28434	0.28774	0.29116	0.29460	0.29806	0.30153	0.30503	0.30854	-0.50
-0.40	0.31207	0.31561	0.31918	0.32276	0.32636	0.32997	0.33360	0.33724	0.3409	0.34458	-0.40
-0.30	0.34827	0.35197	0.35569	0.35942	0.36317	0.36693	0.37070	0.37448	0.37828	0.38209	-0.30
-0.20	0.38591	0.38974	0.39358	0.39743	0.40129	0.40517	0.40905	0.41294	0.41683	0.42074	-0.20
-0.10	0.42465	0.42858	0.43251	0.43644	0.44038	0.44433	0.44828	0.45224	0.45620	0.46017	-0.10
-0.00	0.46414	0.46812	0.47210	0.47608	0.48006	0.48405	0.48803	0.49202	0.49601	0.50000	-0.00

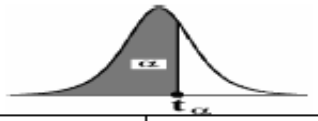
Standard Normal Table (continued)

Areas Under the Standard Normal Curve



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	z
0.00	0.50000	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.52790	0.53188	0.53586	0.00
0.10	0.53983	0.54380	0.54776	0.55172	0.55567	0.55962	0.56356	0.56749	0.57142	0.57535	0.10
0.20	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409	0.20
0.30	0.61791	0.62172	0.62552	0.62930	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173	0.30
0.40	0.65542	0.65910	0.66276	0.66640	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793	0.40
0.50	0.69146	0.69497	0.69847	0.70194	0.70540	0.70884	0.71226	0.71566	0.71904	0.72240	0.50
0.60	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.75490	0.60
0.70	0.75804	0.76115	0.76424	0.76730	0.77035	0.77337	0.77637	0.77935	0.78230	0.78524	0.70
0.80	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327	0.80
0.90	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891	0.90
1.00	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214	1.00
1.10	0.86433	0.86650	0.86864	0.87076	0.87286	0.87493	0.87698	0.87900	0.88100	0.88298	1.10
1.20	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	0.89617	0.89796	0.89973	0.90147	1.20
1.30	0.90320	0.90490	0.90658	0.90824	0.90988	0.91149	0.91309	0.91466	0.91621	0.91774	1.30
1.40	0.91924	0.92073	0.92220	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189	1.40
1.50	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408	1.50
1.60	0.94520	0.94630	0.94738	0.94845	0.94950	0.95053	0.95154	0.95254	0.95352	0.95449	1.60
1.70	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.96080	0.96164	0.96246	0.96327	1.70
1.80	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062	1.80
1.90	0.97128	0.97193	0.97257	0.97320	0.97381	0.97441	0.97500	0.97558	0.97615	0.97670	1.90
2.00	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.98030	0.98077	0.98124	0.98169	2.00
2.10	0.98214	0.98257	0.98300	0.98341	0.98382	0.98422	0.98461	0.98500	0.98537	0.98574	2.10
2.20	0.98610	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.98840	0.98870	0.98899	2.20
2.30	0.98928	0.98956	0.98983	0.99010	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158	2.30
2.40	0.99180	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361	2.40
2.50	0.99379	0.99396	0.99413	0.99430	0.99446	0.99461	0.99477	0.99492	0.99506	0.99520	2.50
2.60	0.99534	0.99547	0.99560	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643	2.60
2.70	0.99653	0.99664	0.99674	0.99683	0.99693	0.99702	0.99711	0.99720	0.99728	0.99736	2.70
2.80	0.99744	0.99752	0.99760	0.99767	0.99774	0.99781	0.99788	0.99795	0.99801	0.99807	2.80
2.90	0.99813	0.99819	0.99825	0.99831	0.99836	0.99841	0.99846	0.99851	0.99856	0.99861	2.90
3.00	0.99865	0.99869	0.99874	0.99878	0.99882	0.99886	0.99889	0.99893	0.99896	0.9990	3.00
3.10	0.99903	0.99906	0.99910	0.99913	0.99916	0.99918	0.99921	0.99924	0.99926	0.99929	3.10
3.20	0.99931	0.99934	0.99936	0.99938	0.99940	0.99942	0.99944	0.99946	0.99948	0.99950	3.20
3.30	0.99952	0.99953	0.99955	0.99957	0.99958	0.99960	0.99961	0.99962	0.99964	0.99965	3.30
3.40	0.99966	0.99968	0.99969	0.99970	0.99971	0.99972	0.99973	0.99974	0.99975	0.99976	3.40
3.50	0.99977	0.99978	0.99978	0.99979	0.99980	0.99981	0.99981	0.99982	0.99983	0.99983	3.50

Critical Values of the t-distribution (t_α)



ν=df	$t_{0.90}$	$t_{0.95}$	$t_{0.975}$	$t_{0.99}$	$t_{0.995}$
1	3.078	6.314	12.706	31.821	63.657
2	1.886	2.920	4.303	6.965	9.925
3	1.638	2.353	3.182	4.541	5.841
4	1.533	2.132	2.776	3.747	4.604
5	1.476	2.015	2.571	3.365	4.032
6	1.440	1.943	2.447	3.143	3.707
7	1.415	1.895	2.365	2.998	3.499
8	1.397	1.860	2.306	2.896	3.355
9	1.383	1.833	2.262	2.821	3.250
10	1.372	1.812	2.228	2.764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.055
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
30	1.310	1.697	2.042	2.457	2.750
35	1.3062	1.6896	2.0301	2.4377	2.7238
40	1.3030	1.6840	2.0210	2.4230	2.7040
45	1.3006	1.6794	2.0141	2.4121	2.6896
50	1.2987	1.6759	2.0086	2.4033	2.6778
60	1.2958	1.6706	2.0003	2.3901	2.6603
70	1.2938	1.6669	1.9944	2.3808	2.6479
80	1.2922	1.6641	1.9901	2.3739	2.6387
90	1.2910	1.6620	1.9867	2.3685	2.6316
100	1.2901	1.6602	1.9840	2.3642	2.6259
120	1.2886	1.6577	1.9799	2.3578	2.6174
140	1.2876	1.6558	1.9771	2.3533	2.6114
160	1.2869	1.6544	1.9749	2.3499	2.6069
180	1.2863	1.6534	1.9732	2.3472	2.6034
200	1.2858	1.6525	1.9719	2.3451	2.6006
∞	1.282	1.645	1.960	2.326	2.576