Přehled testů

(I) **Jednovýběrový t–test o střední hodnotě (σ^2 neznámé)**

H_0	H_1	Testová statistika	Kritický obor
$\mu = \mu_0$	$\mu \neq \mu_0$	$R = \frac{\bar{X}-\mu_0}{S}\sqrt{n}$	$\lvert R\rvert > t_{1-\frac{\alpha}{2}}(n-1)$
$\mu = \mu_0$	$\mu > \mu_0$		$R > t_{1-\alpha}(n-1)$
$\mu = \mu_0$	$\mu < \mu_0$		$R < -t_{1-\alpha}(n-1)$

$$\bar{X} = \frac{1}{n}\sum_{i=1}^{n} X_i, \quad S^2 = \frac{1}{n-1}\sum_{i=1}^{n}(X_i - \bar{X})^2 = \frac{1}{n-1}\left(\sum_{i=1}^{n} X_i^2 - n\bar{X}^2\right)$$

(II) **Jednovýběrový test o střední hodnotě (σ^2 známé)**

H_0	H_1	Testová statistika	Kritický obor
$\mu = \mu_0$	$\mu \neq \mu_0$	$R = \frac{\bar{X}-\mu_0}{\sigma}\sqrt{n}$	$\lvert R\rvert > u_{1-\frac{\alpha}{2}}$
$\mu = \mu_0$	$\mu > \mu_0$		$R > u_{1-\alpha}$
$\mu = \mu_0$	$\mu < \mu_0$		$R < -u_{1-\alpha}$

(III) **Jednovýběrový test o rozptylu**

H_0	H_1	Testová statistika	Kritický obor
$\sigma^2 = \sigma_0^2$	$\sigma^2 \neq \sigma_0^2$	$R = \frac{(n-1)S^2}{\sigma_0^2}$	$R \notin \left(\chi^2_{\frac{\alpha}{2}}(n-1), \chi^2_{1-\frac{\alpha}{2}}(n-1)\right)$
$\sigma^2 = \sigma_0^2$	$\sigma^2 > \sigma_0^2$		$R > \chi^2_{1-\alpha}(n-1)$
$\sigma^2 = \sigma_0^2$	$\sigma^2 < \sigma_0^2$		$R < \chi^2_{\alpha}(n-1)$

(IV) **Dvouvýběrový t–test o středních hodnotách**

H_0	H_1	Testová statistika	Kritický obor
$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$R = \frac{\bar{X}_1-\bar{X}_2}{\sqrt{\frac{S_1^2}{n}+\frac{S_2^2}{m}}}$	$\lvert R\rvert > t_{1-\frac{\alpha}{2}}(l)$
$\mu_1 = \mu_2$	$\mu_1 > \mu_2$		$R > t_{1-\alpha}(l)$
$\mu_1 = \mu_2$	$\mu_1 < \mu_2$		$R < -t_{1-\alpha}(l)$

$$l = \frac{\left(\frac{S_1^2}{n}+\frac{S_2^2}{m}\right)^2}{\frac{1}{n-1}\frac{S_1^4}{n^2}+\frac{1}{m-1}\frac{S_2^4}{m^2}}$$

(V) **Dvouvýběrový t–test o středních hodnotách ($\sigma_1^2 = \sigma_2^2$ neznáme)**

H_0	H_1	Testová statistika	Kritický obor
$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$R = \frac{\bar{X}_1-\bar{X}_2}{S_{12}}\sqrt{\frac{nm}{n+m}}$	$\lvert R\rvert > t_{1-\frac{\alpha}{2}}(n+m-2)$
$\mu_1 = \mu_2$	$\mu_1 > \mu_2$		$R > t_{1-\alpha}(n+m-2)$
$\mu_1 = \mu_2$	$\mu_1 < \mu_2$		$R < -t_{1-\alpha}(n+m-2)$

$$S_{12} = \sqrt{\frac{(n-1)S_1^2 + (m-1)S_2^2}{n+m-2}}$$

(VI) **Dvouvýběrový t–test o středních hodnotách (σ_1^2, σ_2^2 známe)**

H_0	H_1	Testová statistika	Kritický obor
$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$R = \frac{\bar{X}_1-\bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n}+\frac{\sigma_2^2}{m}}}$	$\lvert R\rvert > u_{1-\frac{\alpha}{2}}$
$\mu_1 = \mu_2$	$\mu_1 > \mu_2$		$R > u_{1-\alpha}$
$\mu_1 = \mu_2$	$\mu_1 < \mu_2$		$R < -u_{1-\alpha}$

(VII) **Párový t–test o středních hodnotách (σ_1^2, σ_2^2 neznáme)**

H_0	H_1	Testová statistika	Kritický obor
$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$R = \frac{\bar{Z}}{S_Z}\sqrt{n}$	$\lvert R\rvert > t_{1-\frac{\alpha}{2}}(n-1)$
$\mu_1 = \mu_2$	$\mu_1 > \mu_2$		$R > t_{1-\alpha}(n-1)$
$\mu_1 = \mu_2$	$\mu_1 < \mu_2$		$R < -t_{1-\alpha}(n-1)$

$$Z_i = X_i - Y_i, \quad \bar{Z} = \frac{1}{n}\sum_{i=1}^{n} Z_i, \quad S_Z^2 = \frac{1}{n-1}\sum_{i=1}^{n}(Z_i - \bar{Z})^2 = \frac{1}{n-1}\left(\sum_{i=1}^{n} Z_i^2 - n\bar{Z}^2\right)$$

(VIII) **Dvouvýběrový F–test o rozptylech**

H_0	H_1	Testová statistika	Kritický obor
$\sigma_1^2 = \sigma_2^2$	$\sigma_1^2 \neq \sigma_2^2$	$R = \frac{S_1^2}{S_2^2}$	$R \notin \left(F_{\frac{\alpha}{2}}(n-1,m-1), F_{1-\frac{\alpha}{2}}(n-1,m-1)\right)$
$\sigma_1^2 = \sigma_2^2$	$\sigma_1^2 > \sigma_2^2$		$R > F_{1-\alpha}(n-1,m-1)$
$\sigma_1^2 = \sigma_2^2$	$\sigma_1^2 < \sigma_2^2$		$R < F_{\alpha}(n-1,m-1)$

(IX) **Test nezávislosti (o korelačním koeficientu)**

H_0	H_1	Testová statistika	Kritický obor
$\rho(X,Y) = 0$	$\rho(X,Y) \neq 0$	$R = \frac{r(X,Y)}{\sqrt{1-r^2(X,Y)}}\sqrt{n-2}$	$\lvert R\rvert > t_{1-\frac{\alpha}{2}}(n-2)$
$\rho(X,Y) = 0$	$\rho(X,Y) > 0$		$R > t_{1-\alpha}(n-2)$
$\rho(X,Y) = 0$	$\rho(X,Y) < 0$		$R < -t_{1-\alpha}(n-2)$

$$r(X,Y) = \frac{S_{XY}}{S_X S_Y}, \quad S_{XY} = \frac{1}{n-1}\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y}) = \frac{1}{n-1}\left(\sum_{i=1}^{n} X_i Y_i - n\bar{X}\bar{Y}\right)$$

(X) **χ^2–test dobré shody**

H_0	H_1	Testová statistika	Kritický obor
X má dané hypotetické rozdělení	X nemá dané hypotetické rozdělení	$R = \sum_{i=1}^{k} \frac{(n_i - \hat{N}_i)^2}{\hat{N}_i}$ [1]	$R > \chi^2_{1-\alpha}(k-r-1)$

$$\hat{N}_i = n\hat{p}_i$$

(XI) **Test nezávislosti v kontingenční tabulce**

H_0	H_1	Testová statistika	Kritický obor
X, Y jsou nezávislé	X, Y nejsou nezávislé	$R = \sum_{i=1}^{r}\sum_{j=1}^{c} \frac{\left(n_{ij} - \hat{N}_{ij}\right)^2}{\hat{N}_{ij}}$ [2]	$R > \chi^2_{1-\alpha}\big((r-1)(c-1)\big)$

$$\hat{N}_{ij} = \frac{n_{i\cdot} n_{\cdot j}}{n}$$

(XII) **Přímková regrese** $Y(x) = \beta_1 + \beta_2 x + \epsilon(x),\ \epsilon(x) \sim \mathcal{N}(0, \sigma^2)$

$$\mathbb{E}\,Y(x) = \eta(x) = \beta_1 + \beta_2 x, \quad \hat{\beta}_2 \equiv b_2 = \frac{n\sum x_i Y_i - \sum x_i \sum Y_i}{n\sum x_i^2 - \left(\sum x_i\right)^2}, \quad \hat{\beta}_1 \equiv b_1 = \bar{Y} - b_2\bar{x}$$

$$\hat{\sigma}^2 = s^2 = \frac{\sum Y_i^2 - b_1\sum Y_i - b_2\sum x_i Y_i}{n-2}$$

$$s_{b_1}^2 = s^2\frac{\sum x_i^2}{n\sum x_i^2 - \left(\sum x_i\right)^2}, \quad s_{b_2}^2 = s^2\frac{n}{n\sum x_i^2 - \left(\sum x_i\right)^2}$$

$$s_{\hat{\eta}(x)}^2 = s^2\left(\frac{1}{n} + \frac{(x-\bar{x})^2}{\sum x_i^2 - n\bar{x}^2}\right), \quad s_{\hat{Y}(x)}^2 = s^2\left(1 + \frac{1}{n} + \frac{(x-\bar{x})^2}{\sum x_i^2 - n\bar{x}^2}\right)$$

$$\beta_1 \in \left[b_1 - t_{1-\frac{\alpha}{2}}(n-2)s_{b_1}, b_1 + t_{1-\frac{\alpha}{2}}(n-2)s_{b_1}\right],\ \beta_2 \in \left[b_2 - t_{1-\frac{\alpha}{2}}(n-2)s_{b_2}, b_2 + t_{1-\frac{\alpha}{2}}(n-2)s_{b_2}\right]$$

$$\eta(x) \in \left[b_1 + b_2 x - t_{1-\frac{\alpha}{2}}(n-2)s_{\hat{\eta}(x)}, b_1 + b_2 x + t_{1-\frac{\alpha}{2}}(n-2)s_{\hat{\eta}(x)}\right]$$

$$Y(x) \in \left[b_1 + b_2 x - t_{1-\frac{\alpha}{2}}(n-2)s_{\hat{Y}(x)}, b_1 + b_2 x + t_{1-\frac{\alpha}{2}}(n-2)s_{\hat{Y}(x)}\right]$$

[1] výpočtový vzorec

$$R = \sum_{i=1}^{k}\frac{n_i^2}{\hat{N}_i} - n$$

[2] výpočtový vzorec

$$R = n\left(\sum_{i=1}^{r}\sum_{j=1}^{c}\frac{n_{ij}^2}{n_{i\cdot}n_{\cdot j}} - 1\right)$$

(XIII) **Jednofaktorová analýza rozptylu (ANOVA) – vyvážené třídění**

Uvažujeme k nezávislých náhodných výběrů o stejném rozsahu n

$$H_0 : \mu_1 = \ldots = \mu_k, \qquad H_1 : \mathrm{non} H_0$$

Testová statistika

$$F = \frac{n \dfrac{\sum_{l=1}^{k} (\bar{X}_{l.} - \bar{X}_{..})^2}{k-1}}{\dfrac{1}{k} \sum_{l=1}^{k} \left(\dfrac{1}{n-1} \sum_{i=1}^{n} (X_{li} - \bar{X}_{l.})^2 \right)}$$

kde

$$\bar{X}_{l.} = \frac{1}{n} \sum_{i=1}^{n} X_{li} \quad \forall l = 1, \ldots, k, \qquad \bar{X}_{..} = \frac{1}{kn} \sum_{l=1}^{k} \sum_{i=1}^{n} X_{li} = \frac{1}{k} \sum_{l=1}^{k} \bar{X}_{l.}$$

Kritický obor

$$W_\alpha = \left\{ F > F_{1-\alpha}\big(k-1, k(n-1)\big) \right\}$$

Přehled intervalů spolehlivosti

$(1-\alpha)100\%$–ní interval spolehlivosti		
pro	předpoklady	oboustranný dolní horní
μ	$\mathcal{N}(\mu,\sigma^2)$ σ^2 neznáme	$\left[\bar{x}-t_{1-\frac{\alpha}{2}}(n-1)\frac{s}{\sqrt{n}},\bar{x}+t_{1-\frac{\alpha}{2}}(n-1)\frac{s}{\sqrt{n}}\right]$ $\left[\bar{x}-t_{1-\alpha}(n-1)\frac{s}{\sqrt{n}},+\infty\right)$ $\left(-\infty,\bar{x}+t_{1-\alpha}(n-1)\frac{s}{\sqrt{n}}\right]$
μ	$\mathcal{N}(\mu,\sigma^2)$ σ^2 známe	$\left[\bar{x}-u_{1-\frac{\alpha}{2}}\frac{\sigma}{\sqrt{n}},\bar{x}+u_{1-\frac{\alpha}{2}}\frac{\sigma}{\sqrt{n}}\right]$ $\left[\bar{x}-u_{1-\alpha}\frac{\sigma}{\sqrt{n}},+\infty\right)$ $\left(-\infty,\bar{x}+u_{1-\alpha}\frac{\sigma}{\sqrt{n}}\right]$
σ^2	$\mathcal{N}(\mu,\sigma^2)$	$\left[\frac{(n-1)s^2}{\chi^2_{1-\frac{\alpha}{2}}(n-1)},\frac{(n-1)s^2}{\chi^2_{\frac{\alpha}{2}}(n-1)}\right]$ $\left[\frac{(n-1)s^2}{\chi^2_{1-\alpha}(n-1)},+\infty\right)$ $\left(0,\frac{(n-1)s^2}{\chi^2_{\alpha}(n-1)}\right]$
$\mu_1-\mu_2$	$\mathcal{N}(\mu_1,\sigma^2),\mathcal{N}(\mu_2,\sigma^2)$ nezávislé σ^2 neznáme	$\left[\bar{x}_1-\bar{x}_2-t_{1-\frac{\alpha}{2}}(n+m-2)s_{12}\,\bar{n},\bar{x}_1-\bar{x}_2+t_{1-\frac{\alpha}{2}}(n+m-2)s_{12}\,\bar{n}\right]$ $\left[\bar{x}_1-\bar{x}_2-t_{1-\alpha}(n+m-2)s_{12}\,\bar{n},+\infty\right)$ $\left(-\infty,\bar{x}_1-\bar{x}_2+t_{1-\alpha}(n+m-2)s_{12}\,\bar{n}\right]$
$\mu_1-\mu_2$	$\mathcal{N}(\mu_1,\sigma_1^2),\mathcal{N}(\mu_2,\sigma_2^2)$ nezávislé σ_1^2,σ_2^2 známe	$\left[\bar{x}_1-\bar{x}_2-u_{1-\frac{\alpha}{2}}\sqrt{\frac{\sigma_1^2}{n}+\frac{\sigma_2^2}{m}},\bar{x}_1-\bar{x}_2+u_{1-\frac{\alpha}{2}}\sqrt{\frac{\sigma_1^2}{n}+\frac{\sigma_2^2}{m}}\right]$ $\left[\bar{x}_1-\bar{x}_2-u_{1-\alpha}\sqrt{\frac{\sigma_1^2}{n}+\frac{\sigma_2^2}{m}},+\infty\right)$ $\left(-\infty,\bar{x}_1-\bar{x}_2+u_{1-\alpha}\sqrt{\frac{\sigma_1^2}{n}+\frac{\sigma_2^2}{m}}\right]$
$\frac{\sigma_1^2}{\sigma_2^2}$	$\mathcal{N}(\mu_1,\sigma_1^2),\mathcal{N}(\mu_2,\sigma_2^2)$ nezávislé	$\left[\frac{1}{F_{1-\frac{\alpha}{2}}(n-1,m-1)}\frac{s_1^2}{s_2^2},\frac{1}{F_{\frac{\alpha}{2}}(n-1,m-1)}\frac{s_1^2}{s_2^2}\right]$ $\left[\frac{1}{F_{1-\alpha}(n-1,m-1)}\frac{s_1^2}{s_2^2},+\infty\right)$ $\left(0,\frac{1}{F_{\alpha}(n-1,m-1)}\frac{s_1^2}{s_2^2}\right]$

$$\bar{n}=\sqrt{\frac{1}{n}+\frac{1}{m}}$$

Tabulky

Tab. 1. Distribuční funkce normálního rozdělení $\mathcal{N}(0,1)$: $\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{x} \mathrm{e}^{-\frac{u^2}{2}} \mathrm{d}u$

x	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	x
0.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586	0.0
0.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535	0.1
0.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409	0.2
0.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173	0.3
0.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793	0.4
0.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240	0.5
0.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490	0.6
0.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524	0.7
0.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327	0.8
0.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891	0.9
1.0	.84134	.84375	.84614	.84850	.85083	.85314	.85543	.85769	.85993	.86214	1.0
1.1	.86433	.86650	.86864	.87076	.87286	.87493	.87698	.87900	.88100	.88298	1.1
1.2	.88493	.88686	.88877	.89065	.89251	.89435	.89617	.89796	.89973	.90147	1.2
1.3	.90320	.90490	.90658	.90824	.90988	.91149	.91309	.91466	.91621	.91774	1.3
1.4	.91924	.92073	.92220	.92364	.92507	.92647	.92786	.92922	.93056	.93189	1.4
1.5	.93319	.93448	.93574	.93699	.93822	.93943	.94062	.94179	.94295	.94408	1.5
1.6	.94520	.94630	.94738	.94845	.94950	.95053	.95154	.95254	.95352	.95449	1.6
1.7	.95543	.95637	.95728	.95818	.95907	.95994	.96080	.96164	.96246	.96327	1.7
1.8	.96407	.96485	.96562	.96638	.96712	.96784	.96856	.96926	.96995	.97062	1.8
1.9	.97128	.97193	.97257	.97320	.97381	.97441	.97500	.97558	.97615	.97670	1.9
2.0	.97725	.97778	.97831	.97882	.97933	.97982	.98030	.98077	.98124	.98169	2.0
2.1	.98214	.98257	.98300	.98341	.98382	.98422	.98461	.98500	.98537	.98574	2.1
2.2	.98610	.98645	.98679	.98713	.98745	.98778	.98809	.98840	.98870	.98899	2.2
2.3	.98928	.98956	.98983	.99010	.99036	.99061	.99086	.99111	.99134	.99158	2.3
2.4	.99180	.99202	.99224	.99245	.99266	.99286	.99305	.99324	.99343	.99361	2.4
2.5	.99379	.99396	.99413	.99430	.99446	.99461	.99477	.99492	.99506	.99520	2.5
2.6	.99534	.99547	.99560	.99573	.99586	.99598	.99609	.99621	.99632	.99643	2.6
2.7	.99653	.99664	.99674	.99683	.99693	.99702	.99711	.99720	.99728	.99737	2.7
2.8	.99745	.99752	.99760	.99767	.99774	.99781	.99788	.99795	.99801	.99807	2.8
2.9	.99813	.99819	.99825	.99831	.99836	.99841	.99846	.99851	.99856	.99861	2.9
3.0	.99865	.99869	.99874	.99878	.99882	.99886	.99889	.99893	.99897	.99900	3.0
3.1	.99903	.99906	.99910	.99913	.99916	.99918	.99921	.99924	.99926	.99929	3.1
3.2	.99931	.99934	.99936	.99938	.99940	.99942	.99944	.99946	.99948	.99950	3, 2
3.3	.99952	.99954	.99955	.99957	.99958	.99960	.99961	.99962	.99964	.99965	3.3
3.4	.99966	.99968	.99969	.99970	.99971	.99972	.99973	.99974	.99975	.99976	3.4

$$\Phi(-x) = 1 - \Phi(x)$$

Tab. 2. Kvantily normálního rozdělení $N(0,1)$ ($X \sim N(0,1)$): $\mathbb{P}(X \leq u_\alpha) = \alpha$

α	0.5	0.9	0.95	0.975	0.99	0.995	0.999
u_α	0	1.282	1.645	1.960	2.326	2.576	3.090

Tab. 3. Kvantily $\chi^2(n)$–rozdělení ($X \sim \chi^2(n)$): $\mathbb{P}\left(X \leq \chi^2_\alpha(n)\right) = \alpha$

n	α									
	0.005	0.01	0.025	0.05	0.1	0.9	0.95	0.975	0.99	0.995
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.880
2	0.010	0.0201	0.0506	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.873	1.237	1.635	2.204	10.645	12.592	14.450	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.0535	3.816	4.575	5.5778	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.820
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.4078	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
30	13.787	14.953	16.791	18.493	20.599	40.256	43.773	46.979	50.892	53.672
35	17.192	18.509	20.569	22.465	24.797	46.059	49.802	53.203	57.342	60.275
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
45	24.311	25.901	28.366	30.612	33.350	57.505	61.656	65.410	69.957	73.166
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	95.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169

Tab. 4. Kvantily t–rozdělení ($X \sim t(n)$): $\mathbb{P}\left(X \leq t_\alpha(n)\right) = \alpha$

n	α							
	0.8	0.9	0.95	0.975	0.99	0.995	0.9975	0.9995
1	1.376	3.078	6.314	12.706	31.821	63.657	127.321	636.619
2	1.061	1.886	2.920	4.303	6.965	9.925	14.089	31.599
3	0.978	1.638	2.353	3.182	4.541	5.841	7.453	12.924
4	0.941	1.533	2.132	2.776	3.747	4.604	5.598	8.610
5	0.920	1.476	2.015	2.571	3.365	4.032	4.773	6.869
6	0.906	1.440	1.943	2.447	3.143	3.707	4.317	5.959
7	0.896	1.415	1.895	2.365	2.998	3.499	4.029	5.408
8	0.889	1.397	1.860	2.306	2.896	3.355	3.833	5.041
9	0.883	1.383	1.833	2.262	2.821	3.250	3.690	4.781
10	0.879	1.372	1.812	2.228	2.764	3.169	3.581	4.587
11	0.876	1.363	1.796	2.201	2.718	3.106	3.497	4.437
12	0.873	1.356	1.782	2.179	2.681	3.055	3.428	4.318
13	0.870	1.350	1.771	2.160	2.650	3.012	3.372	4.221
14	0.868	1.345	1.761	2.145	2.624	2.977	3.326	4.140
15	0.866	1.341	1.753	2.131	2.602	2.947	3.286	4.073
16	0.865	1.337	1.746	2.120	2.583	2.921	3.252	4.015
17	0.863	1.333	1.740	2.110	2.567	2.898	3.222	3.965
18	0.862	1.330	1.734	2.101	2.552	2.878	3.197	3.922
19	0.861	1.328	1.729	2.093	2.539	2.861	3.174	3.883
20	0.860	1.325	1.725	2.086	2.528	2.845	3.153	3.850
21	0.859	1.323	1.721	2.080	2.518	2.831	3.135	3.819
22	0.858	1.321	1.717	2.074	2.508	2.819	3.119	3.792
23	0.858	1.319	1.714	2.069	2.500	2.807	3.104	3.768
24	0.857	1.318	1.711	2.064	2.492	2.797	3.091	3.745
25	0.856	1.316	1.708	2.060	2.485	2.787	3.078	3.725
30	0.854	1.310	1.697	2.042	2.457	2.750	3.030	3.646
35	0.852	1.306	1.690	2.030	2.438	2.724	2.996	3.591
40	0.851	1.303	1.684	2.021	2.423	2.704	2.971	3.551
45	0.850	1.301	1.679	2.014	2.412	2.690	2.952	3.520
50	0.849	1.299	1.676	2.009	2.403	2.678	2.937	3.496
60	0.848	1.296	1.671	2.000	2.390	2.660	2.915	3.460
70	0.847	1.294	1.667	1.994	2.381	2.648	2.899	3.435
80	0.846	1.292	1.664	1.990	2.374	2.639	2.887	3.416
90	0.846	1.291	1.662	1.987	2.368	2.632	2.878	3.402
100	0.845	1.290	1.660	1.984	2.364	2.626	2.871	3.390
∞	0.842	1.282	1.645	1.960	2.326	2.576	2.807	3.291

Tab. 5.a.I. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.9$

n	m														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	39.86	49.50	53.59	55.83	57.24	58.20	58.91	59.44	59.86	60.19	60.47	60.71	60.90	61.07	61.22
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.40	9.41	9.41	9.42	9.42
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.22	5.22	5.21	5.20	5.20
4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92	3.91	3.90	3.89	3.88	3.87
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30	3.28	3.27	3.26	3.25	3.24
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.92	2.90	2.89	2.88	2.87
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.68	2.67	2.65	2.64	2.63
8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54	2.52	2.50	2.49	2.48	2.46
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.40	2.38	2.36	2.35	2.34
10	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32	2.30	2.28	2.27	2.26	2.24
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25	2.23	2.21	2.19	2.18	2.17
12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.17	2.15	2.13	2.12	2.10
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14	2.12	2.10	2.08	2.07	2.05
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10	2.07	2.05	2.04	2.02	2.01
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	2.04	2.02	2.00	1.99	1.97
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03	2.01	1.99	1.97	1.95	1.94
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00	1.98	1.96	1.94	1.93	1.91
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98	1.95	1.93	1.92	1.90	1.89
19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98	1.96	1.93	1.91	1.89	1.88	1.86
20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.91	1.89	1.87	1.86	1.84
21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95	1.92	1.90	1.87	1.86	1.84	1.83
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90	1.88	1.86	1.84	1.83	1.81
23	2.94	2.55	2.34	2.21	2.11	2.05	1.99	1.95	1.92	1.89	1.87	1.84	1.83	1.81	1.80
24	2.93	2.54	2.33	2.19	2.10	2.04	1.98	1.94	1.91	1.88	1.85	1.83	1.81	1.80	1.78
25	2.92	2.53	2.32	2.18	2.09	2.02	1.97	1.93	1.89	1.87	1.84	1.82	1.80	1.79	1.77
26	2.91	2.52	2.31	2.17	2.08	2.01	1.96	1.92	1.88	1.86	1.83	1.81	1.79	1.77	1.76
27	2.90	2.51	2.30	2.17	2.07	2.00	1.95	1.91	1.87	1.85	1.82	1.80	1.78	1.76	1.75
28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87	1.84	1.81	1.79	1.77	1.75	1.74
29	2.89	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86	1.83	1.80	1.78	1.76	1.75	1.73
30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82	1.79	1.77	1.75	1.74	1.72
35	2.85	2.46	2.25	2.11	2.02	1.95	1.90	1.85	1.82	1.79	1.76	1.74	1.72	1.70	1.69
40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79	1.76	1.74	1.71	1.70	1.68	1.66
45	2.82	2.42	2.21	2.07	1.98	1.91	1.85	1.81	1.77	1.74	1.72	1.70	1.68	1.66	1.64
50	2.81	2.41	2.20	2.06	1.97	1.90	1.84	1.80	1.76	1.73	1.70	1.68	1.66	1.64	1.63
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.68	1.66	1.64	1.62	1.60
70	2.78	2.38	2.16	2.03	1.93	1.86	1.80	1.76	1.72	1.69	1.66	1.64	1.62	1.60	1.59
80	2.77	2.37	2.15	2.02	1.92	1.85	1.79	1.75	1.71	1.68	1.65	1.63	1.61	1.59	1.57
90	2.76	2.36	2.15	2.01	1.91	1.84	1.78	1.74	1.70	1.67	1.64	1.62	1.60	1.58	1.56
100	2.76	2.36	2.14	2.00	1.91	1.83	1.78	1.73	1.69	1.66	1.64	1.61	1.59	1.57	1.56
∞	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63	1.60	1.57	1.55	1.52	1.50	1.49

$$F_\alpha(m,n) = \frac{1}{F_{1-\alpha}(n,m)}$$

Tab. 5.a.II. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.9$

n	m														
	16	17	18	19	20	25	30	40	50	60	70	80	90	100	∞
1	61.35	61.46	61.57	61.66	61.74	62.05	62.26	62.53	62.69	62.79	62.87	62.93	62.97	63.01	63.33
2	9.43	9.43	9.44	9.44	9.44	9.45	9.46	9.47	9.47	9.47	9.48	9.48	9.48	9.48	9.49
3	5.20	5.19	5.19	5.19	5.18	5.17	5.17	5.16	5.15	5.15	5.15	5.15	5.15	5.14	5.13
4	3.86	3.86	3.85	3.85	3.84	3.83	3.82	3.80	3.80	3.79	3.79	3.78	3.78	3.78	3.76
5	3.23	3.22	3.22	3.21	3.21	3.19	3.17	3.16	3.15	3.14	3.14	3.13	3.13	3.13	3.10
6	2.86	2.85	2.85	2.84	2.84	2.81	2.80	2.78	2.77	2.76	2.76	2.75	2.75	2.75	2.72
7	2.62	2.61	2.61	2.60	2.59	2.57	2.56	2.54	2.52	2.51	2.51	2.50	2.50	2.50	2.47
8	2.45	2.45	2.44	2.43	2.42	2.40	2.38	2.36	2.35	2.34	2.33	2.33	2.32	2.32	2.29
9	2.33	2.32	2.31	2.30	2.30	2.27	2.25	2.23	2.22	2.21	2.20	2.20	2.19	2.19	2.16
10	2.23	2.22	2.22	2.21	2.20	2.17	2.16	2.13	2.12	2.11	2.10	2.09	2.09	2.09	2.06
11	2.16	2.15	2.14	2.13	2.12	2.10	2.08	2.05	2.04	2.03	2.02	2.01	2.01	2.01	1.97
12	2.09	2.08	2.08	2.07	2.06	2.03	2.01	1.99	1.97	1.96	1.95	1.95	1.94	1.94	1.90
13	2.04	2.03	2.02	2.01	2.01	1.98	1.96	1.93	1.92	1.90	1.90	1.89	1.89	1.88	1.85
14	2.00	1.99	1.98	1.97	1.96	1.93	1.91	1.89	1.87	1.86	1.85	1.84	1.84	1.83	1.80
15	1.96	1.95	1.94	1.93	1.92	1.89	1.87	1.85	1.83	1.82	1.81	1.80	1.80	1.79	1.76
16	1.93	1.92	1.91	1.90	1.89	1.86	1.84	1.81	1.79	1.78	1.77	1.77	1.76	1.76	1.72
17	1.90	1.89	1.88	1.87	1.86	1.83	1.81	1.78	1.76	1.75	1.74	1.74	1.73	1.73	1.69
18	1.87	1.86	1.85	1.84	1.84	1.80	1.78	1.75	1.74	1.72	1.71	1.71	1.70	1.70	1.66
19	1.85	1.84	1.83	1.82	1.81	1.78	1.76	1.73	1.71	1.70	1.69	1.68	1.68	1.67	1.63
20	1.83	1.82	1.81	1.80	1.79	1.76	1.74	1.71	1.69	1.68	1.67	1.66	1.65	1.65	1.61
21	1.81	1.80	1.79	1.78	1.78	1.74	1.72	1.69	1.67	1.66	1.65	1.64	1.63	1.63	1.59
22	1.80	1.79	1.78	1.77	1.76	1.73	1.70	1.67	1.65	1.64	1.63	1.62	1.62	1.61	1.57
23	1.78	1.77	1.76	1.75	1.74	1.71	1.69	1.66	1.64	1.62	1.61	1.61	1.60	1.59	1.55
24	1.77	1.76	1.75	1.74	1.73	1.70	1.67	1.64	1.62	1.61	1.60	1.59	1.58	1.58	1.53
25	1.76	1.75	1.74	1.73	1.72	1.68	1.66	1.63	1.61	1.59	1.58	1.58	1.57	1.56	1.52
26	1.75	1.73	1.72	1.71	1.71	1.67	1.65	1.61	1.59	1.58	1.57	1.56	1.56	1.55	1.50
27	1.74	1.72	1.71	1.70	1.70	1.66	1.64	1.60	1.58	1.57	1.56	1.55	1.54	1.54	1.49
28	1.73	1.71	1.70	1.69	1.69	1.65	1.63	1.59	1.57	1.56	1.55	1.54	1.53	1.53	1.48
29	1.72	1.71	1.69	1.68	1.68	1.64	1.62	1.58	1.56	1.55	1.54	1.53	1.52	1.52	1.47
30	1.71	1.70	1.69	1.68	1.67	1.63	1.61	1.57	1.55	1.54	1.53	1.52	1.51	1.51	1.46
35	1.67	1.66	1.65	1.64	1.63	1.60	1.57	1.53	1.51	1.50	1.49	1.48	1.47	1.47	1.41
40	1.65	1.64	1.62	1.61	1.61	1.57	1.54	1.51	1.48	1.47	1.46	1.45	1.44	1.43	1.38
45	1.63	1.62	1.60	1.59	1.58	1.55	1.52	1.48	1.46	1.44	1.43	1.42	1.41	1.41	1.35
50	1.61	1.60	1.59	1.58	1.57	1.53	1.50	1.46	1.44	1.42	1.41	1.40	1.39	1.39	1.33
60	1.59	1.58	1.56	1.55	1.54	1.50	1.48	1.44	1.41	1.40	1.38	1.37	1.36	1.36	1.29
70	1.57	1.56	1.55	1.54	1.53	1.49	1.46	1.42	1.39	1.37	1.36	1.35	1.34	1.34	1.27
80	1.56	1.55	1.53	1.52	1.51	1.47	1.44	1.40	1.38	1.36	1.34	1.33	1.33	1.32	1.24
90	1.55	1.54	1.52	1.51	1.50	1.46	1.43	1.39	1.36	1.35	1.33	1.32	1.31	1.30	1.23
100	1.54	1.53	1.52	1.50	1.49	1.45	1.42	1.38	1.35	1.34	1.32	1.31	1.30	1.29	1.21
∞	1.47	1.46	1.44	1.43	1.42	1.38	1.34	1.30	1.26	1.24	1.22	1.21	1.20	1.18	1.00

Tab. 5.b.I. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.95$

n	m														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	161	200	216	225	230	234	237	239	241	242	243	244	245	245	246
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.40	19.41	19.42	19.42	19.43
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.76	8.74	8.73	8.71	8.70
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.94	5.91	5.89	5.87	5.86
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.70	4.68	4.66	4.64	4.62
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.03	4.00	3.98	3.96	3.94
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.60	3.57	3.55	3.53	3.51
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.31	3.28	3.26	3.24	3.22
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.10	3.07	3.05	3.03	3.01
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.94	2.91	2.89	2.86	2.85
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.82	2.79	2.76	2.74	2.72
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.72	2.69	2.66	2.64	2.62
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.63	2.60	2.58	2.55	2.53
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.57	2.53	2.51	2.48	2.46
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.51	2.48	2.45	2.42	2.40
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.46	2.42	2.40	2.37	2.35
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.41	2.38	2.35	2.33	2.31
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.37	2.34	2.31	2.29	2.27
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.34	2.31	2.28	2.26	2.23
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.31	2.28	2.25	2.22	2.20
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.28	2.25	2.22	2.20	2.18
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.26	2.23	2.20	2.17	2.15
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.24	2.20	2.18	2.15	2.13
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.22	2.18	2.15	2.13	2.11
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.20	2.16	2.14	2.11	2.09
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.18	2.15	2.12	2.09	2.07
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.17	2.13	2.10	2.08	2.06
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.15	2.12	2.09	2.06	2.04
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.14	2.10	2.08	2.05	2.03
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.13	2.09	2.06	2.04	2.01
35	4.12	3.27	2.87	2.64	2.49	2.37	2.29	2.22	2.16	2.11	2.07	2.04	2.01	1.99	1.96
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.04	2.00	1.97	1.95	1.92
45	4.06	3.20	2.81	2.58	2.42	2.31	2.22	2.15	2.10	2.05	2.01	1.97	1.94	1.92	1.89
50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03	1.99	1.95	1.92	1.89	1.87
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.95	1.92	1.89	1.86	1.84
70	3.98	3.13	2.74	2.50	2.35	2.23	2.14	2.07	2.02	1.97	1.93	1.89	1.86	1.84	1.81
80	3.96	3.11	2.72	2.49	2.33	2.21	2.13	2.06	2.00	1.95	1.91	1.88	1.84	1.82	1.79
90	3.95	3.10	2.71	2.47	2.32	2.20	2.11	2.04	1.99	1.94	1.90	1.86	1.83	1.80	1.78
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.89	1.85	1.82	1.79	1.77
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.79	1.75	1.72	1.69	1.67

Tab. 5.b.II. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \le F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.95$

n	m														
	16	17	18	19	20	25	30	40	50	60	70	80	90	100	∞
1	246	247	247	248	248	249	250	251	252	252	252	253	253	253	254
2	19.43	19.44	19.44	19.44	19.45	19.46	19.46	19.47	19.48	19.48	19.48	19.48	19.48	19.49	19.50
3	8.69	8.68	8.67	8.67	8.66	8.63	8.62	8.59	8.58	8.57	8.57	8.56	8.56	8.55	8.53
4	5.84	5.83	5.82	5.81	5.80	5.77	5.75	5.72	5.70	5.69	5.68	5.67	5.67	5.66	5.63
5	4.60	4.59	4.58	4.57	4.56	4.52	4.50	4.46	4.44	4.43	4.42	4.41	4.41	4.41	4.36
6	3.92	3.91	3.90	3.88	3.87	3.83	3.81	3.77	3.75	3.74	3.73	3.72	3.72	3.71	3.67
7	3.49	3.48	3.47	3.46	3.44	3.40	3.38	3.34	3.32	3.30	3.29	3.29	3.28	3.27	3.23
8	3.20	3.19	3.17	3.16	3.15	3.11	3.08	3.04	3.02	3.01	2.99	2.99	2.98	2.97	2.93
9	2.99	2.97	2.96	2.95	2.94	2.89	2.86	2.83	2.80	2.79	2.78	2.77	2.76	2.76	2.71
10	2.83	2.81	2.80	2.79	2.77	2.73	2.70	2.66	2.64	2.62	2.61	2.60	2.59	2.59	2.54
11	2.70	2.69	2.67	2.66	2.65	2.60	2.57	2.53	2.51	2.49	2.48	2.47	2.46	2.46	2.40
12	2.60	2.58	2.57	2.56	2.54	2.50	2.47	2.43	2.40	2.38	2.37	2.36	2.36	2.35	2.30
13	2.51	2.50	2.48	2.47	2.46	2.41	2.38	2.34	2.31	2.30	2.28	2.27	2.27	2.26	2.21
14	2.44	2.43	2.41	2.40	2.39	2.34	2.31	2.27	2.24	2.22	2.21	2.20	2.19	2.19	2.13
15	2.38	2.37	2.35	2.34	2.33	2.28	2.25	2.20	2.18	2.16	2.15	2.14	2.13	2.12	2.07
16	2.33	2.32	2.30	2.29	2.28	2.23	2.19	2.15	2.12	2.11	2.09	2.08	2.07	2.07	2.01
17	2.29	2.27	2.26	2.24	2.23	2.18	2.15	2.10	2.08	2.06	2.05	2.03	2.03	2.02	1.96
18	2.25	2.23	2.22	2.20	2.19	2.14	2.11	2.06	2.04	2.02	2.00	1.99	1.98	1.98	1.92
19	2.21	2.20	2.18	2.17	2.16	2.11	2.07	2.03	2.00	1.98	1.97	1.96	1.95	1.94	1.88
20	2.18	2.17	2.15	2.14	2.12	2.07	2.04	1.99	1.97	1.95	1.93	1.92	1.91	1.91	1.84
21	2.16	2.14	2.12	2.11	2.10	2.05	2.01	1.96	1.94	1.92	1.90	1.89	1.88	1.88	1.81
22	2.13	2.11	2.10	2.08	2.07	2.02	1.98	1.94	1.91	1.89	1.88	1.86	1.86	1.85	1.78
23	2.11	2.09	2.08	2.06	2.05	2.00	1.96	1.91	1.88	1.86	1.85	1.84	1.83	1.82	1.76
24	2.09	2.07	2.05	2.04	2.03	1.97	1.94	1.89	1.86	1.84	1.83	1.82	1.81	1.80	1.73
25	2.07	2.05	2.04	2.02	2.01	1.96	1.92	1.87	1.84	1.82	1.81	1.80	1.79	1.78	1.71
26	2.05	2.03	2.02	2.00	1.99	1.94	1.90	1.85	1.82	1.80	1.79	1.78	1.77	1.76	1.69
27	2.04	2.02	2.00	1.99	1.97	1.92	1.88	1.84	1.81	1.79	1.77	1.76	1.75	1.74	1.67
28	2.02	2.00	1.99	1.97	1.96	1.91	1.87	1.82	1.79	1.77	1.75	1.74	1.73	1.73	1.65
29	2.01	1.99	1.97	1.96	1.94	1.89	1.85	1.81	1.77	1.75	1.74	1.73	1.72	1.71	1.64
30	1.99	1.98	1.96	1.95	1.93	1.88	1.84	1.79	1.76	1.74	1.72	1.71	1.70	1.70	1.62
35	1.94	1.92	1.91	1.89	1.88	1.82	1.79	1.74	1.70	1.68	1.66	1.65	1.64	1.63	1.56
40	1.90	1.89	1.87	1.85	1.84	1.78	1.74	1.69	1.66	1.64	1.62	1.61	1.60	1.59	1.51
45	1.87	1.86	1.84	1.82	1.81	1.75	1.71	1.66	1.63	1.60	1.59	1.57	1.56	1.55	1.47
50	1.85	1.83	1.81	1.80	1.78	1.73	1.69	1.63	1.60	1.58	1.56	1.54	1.53	1.52	1.44
60	1.82	1.80	1.78	1.76	1.75	1.69	1.65	1.59	1.56	1.53	1.52	1.50	1.49	1.48	1.39
70	1.79	1.77	1.75	1.74	1.72	1.66	1.62	1.57	1.53	1.50	1.49	1.47	1.46	1.45	1.35
80	1.77	1.75	1.73	1.72	1.70	1.64	1.60	1.54	1.51	1.48	1.46	1.45	1.44	1.43	1.32
90	1.76	1.74	1.72	1.70	1.69	1.63	1.59	1.53	1.49	1.46	1.44	1.43	1.42	1.41	1.30
100	1.75	1.73	1.71	1.69	1.68	1.62	1.57	1.52	1.48	1.45	1.43	1.41	1.40	1.39	1.28
∞	1.64	1.62	1.60	1.59	1.57	1.51	1.46	1.39	1.35	1.32	1.29	1.27	1.26	1.24	1.00

Tab. 5.c.I. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.975$

n	m														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	648	800	864	900	922	937	948	957	963	969	973	977	980	983	985
2	38.51	39.00	39.17	39.25	39.30	39.33	39.36	39.37	39.39	39.40	39.41	39.41	39.42	39.43	39.43
3	17.44	16.04	15.44	15.10	14.88	14.73	14.62	14.54	14.47	14.42	14.37	14.34	14.30	14.28	14.25
4	12.22	10.65	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.79	8.75	8.71	8.68	8.66
5	10.01	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68	6.62	6.57	6.52	6.49	6.46	6.43
6	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46	5.41	5.37	5.33	5.30	5.27
7	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76	4.71	4.67	4.63	4.60	4.57
8	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36	4.30	4.24	4.20	4.16	4.13	4.10
9	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96	3.91	3.87	3.83	3.80	3.77
10	6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78	3.72	3.66	3.62	3.58	3.55	3.52
11	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59	3.53	3.47	3.43	3.39	3.36	3.33
12	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37	3.32	3.28	3.24	3.21	3.18
13	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31	3.25	3.20	3.15	3.12	3.08	3.05
14	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21	3.15	3.09	3.05	3.01	2.98	2.95
15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	3.01	2.96	2.92	2.89	2.86
16	6.12	4.69	4.08	3.73	3.50	3.34	3.22	3.12	3.05	2.99	2.93	2.89	2.85	2.82	2.79
17	6.04	4.62	4.01	3.66	3.44	3.28	3.16	3.06	2.98	2.92	2.87	2.82	2.79	2.75	2.72
18	5.98	4.56	3.95	3.61	3.38	3.22	3.10	3.01	2.93	2.87	2.81	2.77	2.73	2.70	2.67
19	5.92	4.51	3.90	3.56	3.33	3.17	3.05	2.96	2.88	2.82	2.76	2.72	2.68	2.65	2.62
20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.72	2.68	2.64	2.60	2.57
21	5.83	4.42	3.82	3.48	3.25	3.09	2.97	2.87	2.80	2.73	2.68	2.64	2.60	2.56	2.53
22	5.79	4.38	3.78	3.44	3.22	3.05	2.93	2.84	2.76	2.70	2.65	2.60	2.56	2.53	2.50
23	5.75	4.35	3.75	3.41	3.18	3.02	2.90	2.81	2.73	2.67	2.62	2.57	2.53	2.50	2.47
24	5.72	4.32	3.72	3.38	3.15	2.99	2.87	2.78	2.70	2.64	2.59	2.54	2.50	2.47	2.44
25	5.69	4.29	3.69	3.35	3.13	2.97	2.85	2.75	2.68	2.61	2.56	2.51	2.48	2.44	2.41
26	5.66	4.27	3.67	3.33	3.10	2.94	2.82	2.73	2.65	2.59	2.54	2.49	2.45	2.42	2.39
27	5.63	4.24	3.65	3.31	3.08	2.92	2.80	2.71	2.63	2.57	2.51	2.47	2.43	2.39	2.36
28	5.61	4.22	3.63	3.29	3.06	2.90	2.78	2.69	2.61	2.55	2.49	2.45	2.41	2.37	2.34
29	5.59	4.20	3.61	3.27	3.04	2.88	2.76	2.67	2.59	2.53	2.48	2.43	2.39	2.36	2.32
30	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51	2.46	2.41	2.37	2.34	2.31
35	5.48	4.11	3.52	3.18	2.96	2.80	2.68	2.58	2.50	2.44	2.39	2.34	2.30	2.27	2.23
40	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45	2.39	2.33	2.29	2.25	2.21	2.18
45	5.38	4.01	3.42	3.09	2.86	2.70	2.58	2.49	2.41	2.35	2.29	2.25	2.21	2.17	2.14
50	5.34	3.97	3.39	3.05	2.83	2.67	2.55	2.46	2.38	2.32	2.26	2.22	2.18	2.14	2.11
60	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27	2.22	2.17	2.13	2.09	2.06
70	5.25	3.89	3.31	2.97	2.75	2.59	2.47	2.38	2.30	2.24	2.18	2.14	2.10	2.06	2.03
80	5.22	3.86	3.28	2.95	2.73	2.57	2.45	2.35	2.28	2.21	2.16	2.11	2.07	2.03	2.00
90	5.20	3.84	3.26	2.93	2.71	2.55	2.43	2.34	2.26	2.19	2.14	2.09	2.05	2.02	1.98
100	5.18	3.83	3.25	2.92	2.70	2.54	2.42	2.32	2.24	2.18	2.12	2.08	2.04	2.00	1.97
∞	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11	2.05	1.99	1.94	1.90	1.87	1.83

Tab. 5.c.II. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.975$

n	m														
	16	17	18	19	20	25	30	40	50	60	70	80	90	100	∞
1	987	989	990	992	993	998	1001	1006	1008	1010	1011	1012	1013	1013	1018
2	39.44	39.44	39.44	39.45	39.45	39.46	39.46	39.47	39.48	39.48	39.48	39.49	39.49	39.49	39.50
3	14.23	14.21	14.20	14.18	14.17	14.12	14.08	14.04	14.01	13.99	13.98	13.97	13.96	13.96	13.90
4	8.63	8.61	8.59	8.58	8.56	8.50	8.46	8.41	8.38	8.36	8.35	8.33	8.33	8.32	8.26
5	6.40	6.38	6.36	6.34	6.33	6.27	6.23	6.18	6.14	6.12	6.11	6.10	6.09	6.08	6.02
6	5.24	5.22	5.20	5.18	5.17	5.11	5.07	5.01	4.98	4.96	4.94	4.93	4.92	4.92	4.85
7	4.54	4.52	4.50	4.48	4.47	4.40	4.36	4.31	4.28	4.25	4.24	4.23	4.22	4.21	4.14
8	4.08	4.05	4.03	4.02	4.00	3.94	3.89	3.84	3.81	3.78	3.77	3.76	3.75	3.74	3.67
9	3.74	3.72	3.70	3.68	3.67	3.60	3.56	3.51	3.47	3.45	3.43	3.42	3.41	3.40	3.33
10	3.50	3.47	3.45	3.44	3.42	3.35	3.31	3.26	3.22	3.20	3.18	3.17	3.16	3.15	3.08
11	3.30	3.28	3.26	3.24	3.23	3.16	3.12	3.06	3.03	3.00	2.99	2.97	2.96	2.96	2.88
12	3.15	3.13	3.11	3.09	3.07	3.01	2.96	2.91	2.87	2.85	2.83	2.82	2.81	2.80	2.72
13	3.03	3.00	2.98	2.96	2.95	2.88	2.84	2.78	2.74	2.72	2.70	2.69	2.68	2.67	2.60
14	2.92	2.90	2.88	2.86	2.84	2.78	2.73	2.67	2.64	2.61	2.60	2.58	2.57	2.56	2.49
15	2.84	2.81	2.79	2.77	2.76	2.69	2.64	2.59	2.55	2.52	2.51	2.49	2.48	2.47	2.40
16	2.76	2.74	2.72	2.70	2.68	2.61	2.57	2.51	2.47	2.45	2.43	2.42	2.40	2.40	2.32
17	2.70	2.67	2.65	2.63	2.62	2.55	2.50	2.44	2.41	2.38	2.36	2.35	2.34	2.33	2.25
18	2.64	2.62	2.60	2.58	2.56	2.49	2.44	2.38	2.35	2.32	2.30	2.29	2.28	2.27	2.19
19	2.59	2.57	2.55	2.53	2.51	2.44	2.39	2.33	2.30	2.27	2.25	2.24	2.23	2.22	2.13
20	2.55	2.52	2.50	2.48	2.46	2.40	2.35	2.29	2.25	2.22	2.20	2.19	2.18	2.17	2.09
21	2.51	2.48	2.46	2.44	2.42	2.36	2.31	2.25	2.21	2.18	2.16	2.15	2.14	2.13	2.04
22	2.47	2.45	2.43	2.41	2.39	2.32	2.27	2.21	2.17	2.14	2.13	2.11	2.10	2.09	2.00
23	2.44	2.42	2.39	2.37	2.36	2.29	2.24	2.18	2.14	2.11	2.09	2.08	2.07	2.06	1.97
24	2.41	2.39	2.36	2.35	2.33	2.26	2.21	2.15	2.11	2.08	2.06	2.05	2.03	2.02	1.94
25	2.38	2.36	2.34	2.32	2.30	2.23	2.18	2.12	2.08	2.05	2.03	2.02	2.01	2.00	1.91
26	2.36	2.34	2.31	2.29	2.28	2.21	2.16	2.09	2.05	2.03	2.01	1.99	1.98	1.97	1.88
27	2.34	2.31	2.29	2.27	2.25	2.18	2.13	2.07	2.03	2.00	1.98	1.97	1.95	1.94	1.85
28	2.32	2.29	2.27	2.25	2.23	2.16	2.11	2.05	2.01	1.98	1.96	1.94	1.93	1.92	1.83
29	2.30	2.27	2.25	2.23	2.21	2.14	2.09	2.03	1.99	1.96	1.94	1.92	1.91	1.90	1.81
30	2.28	2.26	2.23	2.21	2.20	2.12	2.07	2.01	1.97	1.94	1.92	1.90	1.89	1.88	1.79
35	2.21	2.18	2.16	2.14	2.12	2.05	2.00	1.93	1.89	1.86	1.84	1.82	1.81	1.80	1.70
40	2.15	2.13	2.11	2.09	2.07	1.99	1.94	1.88	1.83	1.80	1.78	1.76	1.75	1.74	1.64
45	2.11	2.09	2.07	2.04	2.03	1.95	1.90	1.83	1.79	1.76	1.74	1.72	1.70	1.69	1.59
50	2.08	2.06	2.03	2.01	1.99	1.92	1.87	1.80	1.75	1.72	1.70	1.68	1.67	1.66	1.55
60	2.03	2.01	1.98	1.96	1.94	1.87	1.82	1.74	1.70	1.67	1.64	1.63	1.61	1.60	1.48
70	2.00	1.97	1.95	1.93	1.91	1.83	1.78	1.71	1.66	1.63	1.60	1.59	1.57	1.56	1.44
80	1.97	1.95	1.92	1.90	1.88	1.81	1.75	1.68	1.63	1.60	1.57	1.55	1.54	1.53	1.40
90	1.95	1.93	1.91	1.88	1.86	1.79	1.73	1.66	1.61	1.58	1.55	1.53	1.52	1.50	1.37
100	1.94	1.91	1.89	1.87	1.85	1.77	1.71	1.64	1.59	1.56	1.53	1.51	1.50	1.48	1.35
∞	1.80	1.78	1.75	1.73	1.71	1.63	1.57	1.48	1.43	1.39	1.36	1.33	1.31	1.30	1.00

Tab. 5.d.I. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \leq F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.99$

n	m														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	4052	5000	5403	5625	5764	5859	5928	5981	6022	6056	6083	6106	6126	6143	6157
2	98.50	99.00	99.17	99.25	99.30	99.33	99.36	99.37	99.39	99.40	99.41	99.42	99.42	99.43	99.43
3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.35	27.23	27.13	27.05	26.98	26.92	26.87
4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55	14.45	14.37	14.31	14.25	14.20
5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16	10.05	9.96	9.89	9.82	9.77	9.72
6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87	7.79	7.72	7.66	7.60	7.56
7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62	6.54	6.47	6.41	6.36	6.31
8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81	5.73	5.67	5.61	5.56	5.52
9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26	5.18	5.11	5.05	5.01	4.96
10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85	4.77	4.71	4.65	4.60	4.56
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54	4.46	4.40	4.34	4.29	4.25
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30	4.22	4.16	4.10	4.05	4.01
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10	4.02	3.96	3.91	3.86	3.82
14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94	3.86	3.80	3.75	3.70	3.66
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80	3.73	3.67	3.61	3.56	3.52
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69	3.62	3.55	3.50	3.45	3.41
17	8.40	6.11	5.18	4.67	4.34	4.10	3.93	3.79	3.68	3.59	3.52	3.46	3.40	3.35	3.31
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51	3.43	3.37	3.32	3.27	3.23
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43	3.36	3.30	3.24	3.19	3.15
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37	3.29	3.23	3.18	3.13	3.09
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31	3.24	3.17	3.12	3.07	3.03
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26	3.18	3.12	3.07	3.02	2.98
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21	3.14	3.07	3.02	2.97	2.93
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17	3.09	3.03	2.98	2.93	2.89
25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22	3.13	3.06	2.99	2.94	2.89	2.85
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18	3.09	3.02	2.96	2.90	2.86	2.81
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06	2.99	2.93	2.87	2.82	2.78
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03	2.96	2.90	2.84	2.79	2.75
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00	2.93	2.87	2.81	2.77	2.73
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98	2.91	2.84	2.79	2.74	2.70
35	7.42	5.27	4.40	3.91	3.59	3.37	3.20	3.07	2.96	2.88	2.80	2.74	2.69	2.64	2.60
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80	2.73	2.66	2.61	2.56	2.52
45	7.23	5.11	4.25	3.77	3.45	3.23	3.07	2.94	2.83	2.74	2.67	2.61	2.55	2.51	2.46
50	7.17	5.06	4.20	3.72	3.41	3.19	3.02	2.89	2.78	2.70	2.63	2.56	2.51	2.46	2.42
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63	2.56	2.50	2.44	2.39	2.35
70	7.01	4.92	4.07	3.60	3.29	3.07	2.91	2.78	2.67	2.59	2.51	2.45	2.40	2.35	2.31
80	6.96	4.88	4.04	3.56	3.26	3.04	2.87	2.74	2.64	2.55	2.48	2.42	2.36	2.31	2.27
90	6.93	4.85	4.01	3.53	3.23	3.01	2.84	2.72	2.61	2.52	2.45	2.39	2.33	2.29	2.24
100	6.90	4.82	3.98	3.51	3.21	2.99	2.82	2.69	2.59	2.50	2.43	2.37	2.31	2.27	2.22
∞	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41	2.32	2.25	2.18	2.13	2.08	2.04

Tab. 5.d.II. Kvantily F–rozdělení ($X \sim F(m,n)$): $\mathbb{P}\left(X \le F_\alpha(m,n)\right) = \alpha$ $\alpha = 0.99$

n	m														
	16	17	18	19	20	25	30	40	50	60	70	80	90	100	∞
1	6170	6181	6192	6201	6209	6240	6261	6287	6303	6313	6321	6326	6331	6334	6366
2	99.44	99.44	99.44	99.45	99.45	99.46	99.47	99.47	99.48	99.48	99.48	99.49	99.49	99.49	99.50
3	26.83	26.79	26.75	26.72	26.69	26.58	26.50	26.41	26.35	26.32	26.29	26.27	26.25	26.24	26.13
4	14.15	14.11	14.08	14.05	14.02	13.91	13.84	13.75	13.69	13.65	13.63	13.61	13.59	13.58	13.46
5	9.68	9.64	9.61	9.58	9.55	9.45	9.38	9.29	9.24	9.20	9.18	9.16	9.14	9.13	9.02
6	7.52	7.48	7.45	7.42	7.40	7.30	7.23	7.14	7.09	7.06	7.03	7.01	7.00	6.99	6.88
7	6.28	6.24	6.21	6.18	6.16	6.06	5.99	5.91	5.86	5.82	5.80	5.78	5.77	5.75	5.65
8	5.48	5.44	5.41	5.38	5.36	5.26	5.20	5.12	5.07	5.03	5.01	4.99	4.97	4.96	4.86
9	4.92	4.89	4.86	4.83	4.81	4.71	4.65	4.57	4.52	4.48	4.46	4.44	4.43	4.41	4.31
10	4.52	4.49	4.46	4.43	4.41	4.31	4.25	4.17	4.12	4.08	4.06	4.04	4.03	4.01	3.91
11	4.21	4.18	4.15	4.12	4.10	4.01	3.94	3.86	3.81	3.78	3.75	3.73	3.72	3.71	3.60
12	3.97	3.94	3.91	3.88	3.86	3.76	3.70	3.62	3.57	3.54	3.51	3.49	3.48	3.47	3.36
13	3.78	3.75	3.72	3.69	3.66	3.57	3.51	3.43	3.38	3.34	3.32	3.30	3.28	3.27	3.17
14	3.62	3.59	3.56	3.53	3.51	3.41	3.35	3.27	3.22	3.18	3.16	3.14	3.12	3.11	3.00
15	3.49	3.45	3.42	3.40	3.37	3.28	3.21	3.13	3.08	3.05	3.02	3.00	2.99	2.98	2.87
16	3.37	3.34	3.31	3.28	3.26	3.16	3.10	3.02	2.97	2.93	2.91	2.89	2.87	2.86	2.75
17	3.27	3.24	3.21	3.19	3.16	3.07	3.00	2.92	2.87	2.83	2.81	2.79	2.78	2.76	2.65
18	3.19	3.16	3.13	3.10	3.08	2.98	2.92	2.84	2.78	2.75	2.72	2.70	2.69	2.68	2.57
19	3.12	3.08	3.05	3.03	3.00	2.91	2.84	2.76	2.71	2.67	2.65	2.63	2.61	2.60	2.49
20	3.05	3.02	2.99	2.96	2.94	2.84	2.78	2.69	2.64	2.61	2.58	2.56	2.55	2.54	2.42
21	2.99	2.96	2.93	2.90	2.88	2.79	2.72	2.64	2.58	2.55	2.52	2.50	2.49	2.48	2.36
22	2.94	2.91	2.88	2.85	2.83	2.73	2.67	2.58	2.53	2.50	2.47	2.45	2.43	2.42	2.31
23	2.89	2.86	2.83	2.80	2.78	2.69	2.62	2.54	2.48	2.45	2.42	2.40	2.39	2.37	2.26
24	2.85	2.82	2.79	2.76	2.74	2.64	2.58	2.49	2.44	2.40	2.38	2.36	2.34	2.33	2.21
25	2.81	2.78	2.75	2.72	2.70	2.60	2.54	2.45	2.40	2.36	2.34	2.32	2.30	2.29	2.17
26	2.78	2.75	2.72	2.69	2.66	2.57	2.50	2.42	2.36	2.33	2.30	2.28	2.26	2.25	2.13
27	2.75	2.71	2.68	2.66	2.63	2.54	2.47	2.38	2.33	2.29	2.27	2.25	2.23	2.22	2.10
28	2.72	2.68	2.65	2.63	2.60	2.51	2.44	2.35	2.30	2.26	2.24	2.22	2.20	2.19	2.06
29	2.69	2.66	2.63	2.60	2.57	2.48	2.41	2.33	2.27	2.23	2.21	2.19	2.17	2.16	2.03
30	2.66	2.63	2.60	2.57	2.55	2.45	2.39	2.30	2.25	2.21	2.18	2.16	2.14	2.13	2.01
35	2.56	2.53	2.50	2.47	2.44	2.35	2.28	2.19	2.14	2.10	2.07	2.05	2.03	2.02	1.89
40	2.48	2.45	2.42	2.39	2.37	2.27	2.20	2.11	2.06	2.02	1.99	1.97	1.95	1.94	1.80
45	2.43	2.39	2.36	2.34	2.31	2.21	2.14	2.05	2.00	1.96	1.93	1.91	1.89	1.88	1.74
50	2.38	2.35	2.32	2.29	2.27	2.17	2.10	2.01	1.95	1.91	1.88	1.86	1.84	1.82	1.68
60	2.31	2.28	2.25	2.22	2.20	2.10	2.03	1.94	1.88	1.84	1.81	1.78	1.76	1.75	1.60
70	2.27	2.23	2.20	2.18	2.15	2.05	1.98	1.89	1.83	1.78	1.75	1.73	1.71	1.70	1.54
80	2.23	2.20	2.17	2.14	2.12	2.01	1.94	1.85	1.79	1.75	1.71	1.69	1.67	1.65	1.49
90	2.21	2.17	2.14	2.11	2.09	1.99	1.92	1.82	1.76	1.72	1.68	1.66	1.64	1.62	1.46
100	2.19	2.15	2.12	2.09	2.07	1.97	1.89	1.80	1.74	1.69	1.66	1.63	1.61	1.60	1.43
∞	2.00	1.97	1.93	1.90	1.88	1.77	1.70	1.59	1.52	1.47	1.43	1.40	1.38	1.36	1.00