1.) $N(a,6) \Rightarrow \sigma^2 = 6 \Rightarrow \sigma = \sqrt{6}$

$n = 100$
$\bar{x} = 16,2$
$\alpha = 0,05$

$H_0 \dots a = 15 \Rightarrow a_0 = 15$
$H_1 \dots a \neq 15$

U-test: $u = \frac{\bar{x} - a_0}{\sigma/\sqrt{n}} = \frac{16,2 - 15}{\sqrt{6}/\sqrt{100}} = 4.899$

$u_{1-\frac{\alpha}{2}} = u_{0.975} = 1,96$

kriterij: $|u| > u_{1-\frac{\alpha}{2}}$

$4,9 > 1.96$ ✓ → HIPOTEZA SE ODBACUJE!

2.) $n = 50$
$\bar{x} = 24,2$
$s^2 = 4.8$
$\alpha = 0.05$

$H_0 \dots a = 25$
$H_1 \dots a < 25$

T-test: $T = \frac{\bar{x} - a_0}{s/\sqrt{n}} = \frac{24,2 - 25}{\sqrt{4.8}/\sqrt{50}} = -2.582$

kriterij: $t < -t_{n-1,\,1-\alpha}$ ← uzima se dvostruki $\alpha$ u očitavanju iz tablice! → $t_{49,\,\alpha=0,1} = -1,68$

$-2,582 < -1,68$ ✓ HIPOTEZA SE ODBACUJE!

3.) $n = 10\,000 \quad p = \frac{1}{2}$
$m = 5120$

$u = \left(\frac{m}{n} - p_0\right)\sqrt{\frac{n}{p_0 \cdot q_0}} = \left(\frac{5120}{10000} - \frac{1}{2}\right)\sqrt{\frac{10000}{\frac{1}{4}}} = 2.4$

KRITERIJ $a \neq a_0 : |u| > u_{1-\frac{\alpha}{2}} \rightarrow 2,4 > u_{1-\frac{\alpha}{2}}$ da odbacimo, no posto nama treba potvrda o ispravnosti, treba nam prvi veći broj da prihvatimo hipotezu → 2,40892 koji ima $p = 0,992 \Rightarrow p > 1 - \frac{\alpha}{2} \Rightarrow \alpha = \frac{1-p}{2} = 0.016$

4.) $p = 500$
$m = 16$
$\alpha = 0,05$
$p = 0.02$

$H_1 \dots a < a_0$

$u = \left(\frac{m}{n} - p_0\right)\sqrt{\frac{n}{p_0 q_0}} = 1,916$

$-u_{1-\alpha} = -u_{0,95} = 1,64485$

$u < -u_{1-\alpha}$

$1,916 < -1,64485$ ✗ → HIPOTEZA SE PRIHVAĆA!

5.) $n=50$

$\bar{x}=12,6$

$S=0,53$, $\alpha=0,05$

$H_0 \dots a=a_0=12$

$H_1 \dots a \neq a_0$

## t-test

$$T=\frac{\bar{X}-a_0}{S/\sqrt{n}}=\frac{0.6}{0,0747}=8,01068$$

$H_1 \dots a \neq a_0$ $\quad t > t_{n-1,1-\frac{\alpha}{2}}$ ODBACUJE SE HIPOTEZA

$8,01 > 2,02$ ✓

6.)

| | 2.5 | 7.5 | 12.5 | 17.5 | 22.5 | |
|---|---|---|---|---|---|---|
| $\mu m$ | 0-5 | 5-10 | 10-15 | 15-20 | +20 | |
| $n_j$ | 15 | 75 | 100 | 50 | 10 | $\rightarrow n=250$ |

$\chi^2$, $\alpha=0.2$, normalna?

$$\bar{x}=\frac{1}{n}\sum_{i=1}^{n} n_i x_i = \frac{1}{250}(15\cdot 2,5+75\cdot 7,5+\dots+10\cdot 22,5)=11,8$$

$$m=\frac{1}{n}\sum_{i=1}^{n} n_i x_i^2 = \frac{1}{250}(15\cdot 2,5^2+\dots+10\cdot 22,5^2)=161,25$$

$$\delta^2 = m-\bar{x}^2 = 161,25-139,24=22 \Rightarrow \delta=4,69$$

$$z_j=\frac{a_j-\bar{x}}{\delta}$$

$$p_j=\frac{1}{2}\left[\phi^*\left(\frac{a_{j+1}-\bar{x}}{\delta}\right)-\phi^*\left(\frac{a_j-\bar{x}}{\delta}\right)\right]$$

| $a_j$ | $a_{j+1}$ | $x_i$ | $n_i$ | $z_j$ | $z_{j+1}$ | $\phi^*(z_j)$ | $\phi^*(z_{j+1})$ | $p_j$ | $\frac{(n_j-np_j)^2}{np_j}$ |
|---|---|---|---|---|---|---|---|---|---|
| -0 | 5 | 2,5 | 15 | $-\infty$ | -1,44 | -1 | -0,855 | 0,0725 | 0,5387 |
| 5 | 10 | 7,5 | 75 | -1,44 | -0,38 | -0,855 | -0,298 | 0,2785 | 0,4149 |
| 10 | 15 | 12,5 | 100 | -0,38 | 0,68 | -0,298 | 0,503 | 0,4005 | 0,001 |
| 15 | 20 | 17,5 | 50 | 0,68 | 1,74 | 0,503 | 0,918 | 0,2075 | 0,067 |
| 20 | 25+ | 22,5 | 10 | 1,74 | $\infty$ | 0,918 | 1 | 0,041 | 0,0067 |
| | | | | | | | | | $\chi^2_q=1,0277$ |

$$z_5=\frac{5-11,8}{4,7}=-1,44$$

$$z_{10}=\frac{10-11,8}{4,7}=-0,38$$

$z_{15}=0,68$, $z_{20}=1,74$

$p_{(0-5)}=\frac{1}{2}(-0,885+1)=0,0725$

$p_{(5-10)}=\frac{1}{2}(-0,298+0,855)=0,278$

$p_{(10-15)}=0,4005$

$p_{(15-20)}=0,2075$

$p_{(20-+\infty)}=\frac{1}{2}(1-0,918)=0,041$

2 parametra $N(a,\sigma^2)$ — 5 razreda

$S.S=m-r-1=5-2-1=2$

$\chi^2_{m-r-1,1-\alpha}=\chi^2_{2,0.8}=3,219$

kriterij: $\chi^2_q > \chi^2_{m-r-1,1-\alpha}$

$1,0277 > 3,219$ $\quad X \rightarrow 1,0277 \not> 3,219$

HIPOTEZA SE PRIHVAĆA, TJ. NE ODBACUJE!

7.) $a_0 = 200$

$n = 8$

165, 170, 182, 185, 193, 200, 203, 210

$\alpha = 0,05$

$H_1 \dots a < a_0$

$\bar{X} = \frac{1}{n}\sum_{i=1}^{n} X_i = 188.5$

$S^2 = \frac{1}{n-1}\sum_{i=1}^{n}(X_i - \bar{X})^2 = 253,43$

t-test: $T = \frac{\bar{X} - a_0}{S/\sqrt{n}} = \frac{188,5 - 200}{\sqrt{253,43}/\sqrt{8}} = -2.0432$

$t_{7,1-\alpha} = t_{0.9} = -1,895$ (dvostrani $\alpha$)

KRITERIJ $t < -t_{n-1,1-\alpha}$

$-2,0432 < -1,895$ ✓ ODBACUJEMO HIPOTEZU!

8.)

| $j$ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| $m_j$ | 12 | 62 | 129 | 172 | 150 | 80 | 28 | 5 | 2 |

$\rightarrow n = 640$

$\chi^2$ test, binomna $\sim B(8, 0.4)$; $\alpha = 0.9$

$B(8, 0.4) \sim B(n, p)$

$n_k = 8$

$p_k = 0.4$

$p = \binom{n_k}{j} p_k^j (1-p_k)^{n-j}$

$\bar{X} = \frac{1}{n}\sum_{i=1}^{n} X_i = 3,21$

$p_j = \binom{8}{j} 0.4^j (0.6)^{8-j}$

| $j$ | $n_j$ | $p_j$ | $\frac{(n_j - np_j)^2}{np_j}$ |
|---|---|---|---|
| 0 | 12 | 0.0168 | 0.14857 |
| 1 | 62 | 0.089 | 0.3808 |
| 2 | 129 | 0,209 | 0.16937 |
| 3 | 172 | 0.2787 | 0.22735 |
| 4 | 150 | 0.2322 | 0.013 |
| 5 | 80 | 0,1238 | $7,44 \cdot 10^{-3}$ |
| 6 | 28 | 0.04128 | 0.09458 |
| 7 | 5 | $7.86 \cdot 10^{-3}$ | } + 0.44 |
| 8 | 2 | $6.55 \cdot 10^{-4}$ | |
| 7 | | 0.00357 | $\chi^2_g = 1,48153$ |

nijedan parametar nismo računali!

$S.S. = m - r - 1 = 8 - 0 - 1 = 7$

$\chi^2_{m-r-1,1-\alpha} = \chi^2_{7,0,1} = 2,833$

$\chi^2_g > \chi^2_{m-r-1,1-\alpha}$

$1,48153 > 2,833$ ✗

PRIHVAĆA SE HIPOTEZA!

9.)

| $x_i$ | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| $m_i$ | 132 | 48 | 20 | 3 | 2 |

$\rightarrow n = 205$

$\alpha = 0.05$

POISSON, $\chi^2$=?

$p_j = \frac{\lambda^j}{j!} e^{-\lambda}$ ; $\lambda = \bar{X} = \frac{1}{n}\sum n_i x_i = \frac{1}{205} \cdot 105 = 0,512$

$p_j = \frac{0,51^j}{j!} e^{-0,51}$

| $i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 132 | 0,5331 | 0.686 |
| 1 | 48 | 0,3069 | 3.53563 |
| 2 | 20 | 0.07392 | 1.01457 |
| 3 | 3 | 0.013247 | } 1.2268 |
| 4 | 2 | $1.68 \cdot 10^{-3}$ | |
| 5 | | 0.014935 | $\chi^2_g = 6.4632$ |

$S.S. = m - r - 1 = 4 - 1 - 1 = 2$

$\chi^2_2 > \chi^2_{m-r-1,\alpha}$

$6.4632 > \chi^2_{2,0.95} \Rightarrow 6.4632 > 5.991$ ✓

ODBACUJE SE HIPOTEZA!

11.) $H_0 \dots a = 200$
$H_1 \dots a \leq 200$
$\alpha = 0,05$

165, 170, 182, 185, 193, 200, 203, 210 $\Rightarrow n=8$

$T = \frac{\bar{x} - a_0}{S/\sqrt{n}} = -2,04$

$\bar{X} = 188,5$

$S^2 = 253,43 \Rightarrow S = 15,919$

kriterij $t < -t_{n-1,1-\alpha}$ $\quad t_{n-1,1-\alpha} = t_{7,1-0,05} = 1,895$

$-2,04 < -1,895$ ✓ ODBACUJEMO $H_0$, PRIHVAĆAMO $H_1$!

12.)

| $x_i$ | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| $n_i$ | 505 | 336 | 125 | 24 | 8 | 2 |

$\Rightarrow n = 1000 \Rightarrow \bar{x} = \frac{1}{n}\sum n_i x_i = \frac{1}{1000}\cdot(1\cdot 336 + \dots 5\cdot 2)$

$\alpha = 0,05$
$\chi^2_g$ POISSON=?

| $x_i$ | $n_i$ | $p_i$ | $n_i - np_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|---|
| 0 | 505 | 0,4965 | 8,5 | 0,145 |
| 1 | 336 | 0,3476 | -11,6 | 0,387 |
| 2 | 125 | 0,1216 | 3,4 | 0,095 |
| 3 | 24 | 0,0283 | -4,3 | 0,653 |
| 4 | 8 | 0,0049 | 5,1 | 3,4704 |
| 5 | 2 | 0,0006 | | |
| | 1000 | ↳0,00059 | | $\chi^2_g = 4,71$ |

$\bar{X} = 0,7$

$E(X) = \lambda = \bar{x} = 0,7$

$p = \frac{\lambda^i}{i!} e^{-\lambda}$

$p_0 = \frac{0,7^0}{0!} e^{-0,7} = 0,4965$ ...

$S.S = m - r - 1 = 5 - 1 - 1 = 3, \quad \chi^2_{3,0,95} = 7,815$

kriterij: $\chi^2_g > \chi^2_{m-r-1,1-\alpha}$

$4,75 < 7,815$ PRIHVAĆA SE HIPOTEZA!

13.)

| $x_i$ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| $n_i$ | 21 | 62 | 50 | 40 | 22 | 0 | 5 | 0 |

$\rightarrow n = 200, \alpha = 0,05,$ POISSON?

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 21 | 0.1353 | 1.357 |
| 1 | 62 | 0.2707 | 1.141 |
| 2 | 50 | 0.2707 | 0.316 |
| 3 | 40 | 0.18045 | 0.423 |
| 4 | 22 | 0.09022 | 0.867 |
| 5 | 0 | 0.036 | 2,716 |
| 6 | 5 | 0.012 | |
| 7 | 0 | $3,43 \cdot 10^{-3}$ | $\chi^2_g = 6.82$ |
| | 200 | 0,0514 | |

$S.S = m - r - 1 = 6 - 1 - 1 = 4$

$\chi^2_{4,0,95} = 9.488$

kriterij: $\chi^2_g > \chi^2_{m-r-1,1-\alpha}$ PRIHVAĆA SE HIPOTEZA!

$6,82 < 9,488$

$\bar{x} = \frac{1}{200}\cdot(1\cdot 62 + \dots 6\cdot 5) = 2$

$\lambda = \bar{x} = 2$

$p = \frac{\lambda^i}{i!} e^{-\lambda}$

14.)

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 6 | 0,1353 | 0,1524 |
| 1 | 10 | 0,2707 | 1,1805 |
| 2 | 20 | 0,2707 | 2,4927 |
| 3 | 10 | 0,1805 | 0,0405 |
| 4 | 6 | 0,0922 | 0,0666 |
| 5 | 0 | 0,036 | |
| | $\Sigma$=52 | | |

$\bar{X} = \frac{1}{52}(10 + \dots + 4 \cdot 6) = 2$

$\boxed{\lambda = 2}$

$p = \frac{\lambda^i}{i!} e^{-\lambda}$

$\chi^2_g = 3,9327$

$\alpha = 0,05 \Rightarrow p = 0,95$

Kriterij: $\chi^2_g > \chi^2_{m-r-1,1-\alpha}$

POISSON $\chi^2_g = ?$

$\chi^2_{4;0,95} = 7,815$

$3,9327 < 7,815$

$S.S = m - r - 1$
$= 5 - 1 - 1$
$= 3$

PRIHVAĆAMO HIPOTEZU!

15.)

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 130 | 0,602 | 0,3519 |
| 1 | 52 | 0,305 | 1,791 |
| 2 | 18 | 0,077 | 0,31 |
| 3 | 4 / 5 | 0,015 | 1,201 |
| 4 | 1 | | |
| | 205 | | $\chi^2_g = 3,639$ |

$\bar{X} = \frac{1}{205}(52 \cdot 1 + \dots + 1 \cdot 4) = 0,5073$

$\lambda = \bar{X} = 0,5073$, $\alpha = 0,05$

$S.S = m - r - 1 = 4 - 1 - 1 = 2$

$\chi^2_{2;0,95} = 5,991$

Kriterij: $\chi^2_g > \chi^2_{m-r-1,1-\alpha}$

$3,639 < 5,991 \Rightarrow$ PRIHVAĆAMO HIPOTEZU

16.) ZADATAK ISTI KAO 12.)

18.)

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 120 | 0,5712 | 0,29042 |
| 1 | 56 | 0,3158 | 0,99064 |
| 2 | 18 | 0,08956 | 0,000432 |
| 3 | 4 / 6 | 0,01671 | 1,2588 |
| 4 | 2 | 0,00234 | |
| | $n$=200 | 0,01905 | $\chi^2_g = 2,54$ |

$\bar{X} = \frac{1}{200}(56 \cdot 1 + 18 \cdot 2 + \dots + 4 \cdot 2) = 0,56$

$\lambda = \bar{X} = 0,56$, $\alpha = 0,05$

$p_i = \frac{\lambda^i}{i!} e^{-\lambda}$

$S.S = m - r - 1 = 4 - 1 - 1 = 2$

$\chi^2_{2;0,95} = 5,991$

Kriterij: $\chi^2_g > \chi^2_{m-r-1,1-\alpha}$

$2,54 < 5,991$

PRIHVAĆAMO HIPOTEZU!

21.)

| $x_i$ | $n_i$ | $p_j$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 317 | 9/16 | 0,0127 |
| 1 | 109 | 3/16 | 0,1523 |
| 2 | 102 | 3/16 | 0,0857 |
| 3 | 32 | 1/16 | 0,257 |
| | n=560 | | $X_g^2 = 0,507$ |

$n = 560$

omjer $\rightarrow 9:3:3:1 \Rightarrow \frac{9}{16}\ \frac{3}{16}\ \frac{3}{16}\ \frac{1}{16}$

$\alpha = 0.05$

$S.S. = m - r - 1 = 4 - 0 - 1 = 3$

$X^2_{3,0,95} = 7,815$

$X_g^2 > X^2_{m-r-1,1-\alpha}$

$0,507 < 7,815 \Rightarrow$ PRIHVAĆAMO HIPOTEZU!

23.)

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{n_i}$ |
|---|---|---|---|
| 1 | 34 | 1/6 | 0,533 |
| 2 | 28 | 1/6 | 0,133 |
| 3 | 26 | 1/6 | 0,533 |
| 4 | 32 | 1/6 | 0,133 |
| 5 | 27 | 1/6 | 0,3 |
| 6 | 33 | 1/6 | 0,3 |
| | n=180 | | $X_g^2 = 1,932$ |

$n = 180$

$\alpha = 0,9$

JEDNOLIKA =?

$S.S = m - r - 1 = 6 - 0 - 1 = 5$

$X^2_{5,0,1} = 1,61$

kriterij: $X_g^2 > X^2_{m-r-1,1-\alpha}$ ODBACUJEMO HIPOTEZU!

24.)

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 20 | 0,1331 | 0,782 |
| 1 | 55 | 0,2663 | 0,6036 |
| 2 | 48 | 0,2706 | 0,108 |
| 3 | 35 | 0,1883 | 0,024 |
| 4 | 18 | 0,0931 | 0,027 |
| 5 | 10 | 0,0348 | 1,2534 |
| | n=186 | | $X_g^2 = 2,799$ |

$\alpha = 0,05$

POISSON=?

$\bar{X} = \frac{1}{186}(55 \cdot 1 + 48 \cdot 2 + \ldots + 10 \cdot 5) = 2,0323$

$\lambda = \bar{x} = 2,0323$

$p_i = \frac{\lambda^i}{i!} e^{-\lambda}$

kriterij: $X_g^2 > X^2_{m-r-1,1-\alpha}$

$2,799 < 9,488$

HIPOTEZA SE PRIHVAĆA!

$S.S = m - r - 1$

$= 6 - 1 - 1$

$= 4$

$X^2_{4,0,95} = 9,488$

25.) $n = 180$ , $\alpha = 0,1$

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 1 | 34 | 1/6 | 0,5333 |
| 2 | 28 | 1/6 | 0,1333 |
| 3 | 26 | 1/6 | 0,5333 |
| 4 | 32 | 1/6 | 0,1333 |
| 5 | 27 | 1/6 | 0,3 |
| 6 | 33 | 1/6 | 0,3 |
| | 180 | | $\chi^2_g = 1,933$ |

$S.S. = m - r - 1 = 6 - 0 - 1 = 5$

$\chi^2_{5,\,0.9} = 9,236$

kriterij: $\chi^2_g > \chi^2_{m-r-1,\,1-\alpha}$

$1,933 < 9,236$ PRIHVAĆAMO HIPOTEZU!

26.) $n = 800$

$\alpha = 0,1$

JEDNOLIKA = ?

| $x_i$ | $n_i$ | $p_i$ | $\frac{(n_i - np_i)^2}{np_i}$ |
|---|---|---|---|
| 0 | 74 | 1/10 | 0.45 |
| 1 | 92 | 1/10 | 1.8 |
| 2 | 83 | 1/10 | 0.1125 |
| 3 | 79 | 1/10 | 0.0125 |
| 4 | 80 | 1/10 | 0 |
| 5 | 73 | 1/10 | 0,6125 |
| 6 | 77 | 1/10 | 0,1125 |
| 7 | 75 | 1/10 | 0,3125 |
| 8 | 76 | 1/10 | 0,2 |
| 9 | 91 | 1/10 | 1,5125 |
| $\Sigma = 800$ | | $\Sigma = 1$ | $\chi^2_g = 5,125$ |

$S.S. = m - r - 1 = 10 - 0 - 1 = 9$

$\chi^2_{9,\,0.9} = 14,684$

kriterij: $\chi^2_g > \chi^2_{m-r-1,\,1-\alpha}$

$5,125 < 14,684$

HIPOTEZA SE PRIHVAĆA!

# SLUŽBENA RJEŠENJA:

## §12. Testiranje hipoteza

**6.** $\chi^2 = 0.73$, $\chi^2_\alpha = 3.22$; ne može se odbaciti
**7.** $t = -2.04$, $t_\alpha = 1.89$; ne prihvaća se
**8.** $\chi^2 = 1.44$, $\chi^2_\alpha = 2.83$, prihvaća se
**9.** $\chi^2 = 6.36$, $\chi^2_\alpha = 5.99$, ne prihvaća se
**10.** $\chi^2 = 0.2553$, Hipoteza se prihvaća
**11.** $t = -1.76$, $t_{\alpha/2} = 2.09$, prihvaća se
**12.** $\chi^2 = 4.54$, $\chi^2_\alpha = 7.8$, ne može se odbaciti
**13.** $\chi^2 = 7.02$, $\chi^2_\alpha = 9.49$, ne može se odbaciti
**14.** $\chi^2 = 4.14$, $\chi^2_\alpha = 7.82$, ne može se odbaciti
**15.** $\chi^2 = 3.64$, $\chi^2_\alpha = 6$, ne može se odbaciti
**16.** $\chi^2 = 4.44$, $\chi^2_\alpha = 7.8$, ne može se odbaciti
**17.** $\chi^2 = 2.88$, $\chi^2_\alpha = 9.5$, ne može se odbaciti
**18.** $\chi^2 = 2.46$, $\chi^2_\alpha = 5.99$, odbacuje se
**19.** prihvaća se
**20.** $\chi^2 = 11.96$, $\chi^2_\alpha = 11.07$, hipoteza se odbacuje
**21.** $\chi^2 = 0.5079$, prihvaća se
**22.** prihvaća se
**23.** Prihvaća se
**24.** Ne prihvaća se
**25.** Hipoteza se prihvaća
**26.** Hipoteza se prihvaća

# TABLICA NORMALNE RAZDIOBE:

TABLICA NORMALNE RAZDIOBE: FUNKCIJA $\Phi^*$

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 00000 | 00080 | 00160 | 00239 | 00319 | 00399 | 00479 | 00559 | 00638 | 00718 |
| 0.01 | 00798 | 00878 | 00957 | 01037 | 01117 | 01197 | 01277 | 01356 | 01436 | 01516 |
| 0.02 | 01596 | 01675 | 01755 | 01835 | 01915 | 01995 | 02074 | 02154 | 02234 | 02314 |
| 0.03 | 02393 | 02473 | 02553 | 02633 | 02712 | 02792 | 02872 | 02951 | 03031 | 03111 |
| 0.04 | 03191 | 03270 | 03350 | 03430 | 03510 | 03589 | 03669 | 03749 | 03828 | 03908 |
| 0.05 | 03988 | 04067 | 04147 | 04227 | 04306 | 04386 | 04466 | 04545 | 04625 | 04705 |
| 0.06 | 04784 | 04864 | 04944 | 05023 | 05103 | 05183 | 05262 | 05342 | 05421 | 05501 |
| 0.07 | 05581 | 05660 | 05740 | 05819 | 05899 | 05979 | 06058 | 06138 | 06217 | 06279 |
| 0.08 | 06376 | 06456 | 06535 | 06615 | 06694 | 06774 | 06853 | 06933 | 07012 | 07092 |
| 0.09 | 07171 | 07251 | 07330 | 07410 | 07489 | 07569 | 07648 | 07727 | 07807 | 07886 |
| 0.10 | 07966 | 08045 | 08124 | 08204 | 08283 | 08362 | 08442 | 08521 | 08600 | 08680 |
| 0.11 | 08759 | 08838 | 08918 | 08977 | 09076 | 09155 | 09235 | 09314 | 09393 | 09472 |
| 0.12 | 09552 | 09631 | 09710 | 09789 | 09868 | 09948 | 10027 | 10106 | 10185 | 10264 |
| 0.13 | 10343 | 10422 | 10502 | 10581 | 10660 | 10739 | 10818 | 10897 | 10976 | 11055 |
| 0.14 | 11134 | 11213 | 11292 | 11371 | 11450 | 11529 | 11608 | 11687 | 11766 | 11845 |
| 0.15 | 11924 | 12002 | 12081 | 12160 | 12239 | 12318 | 12397 | 12476 | 12554 | 12633 |
| 0.16 | 12712 | 12791 | 12869 | 12948 | 13027 | 13106 | 13184 | 13263 | 13342 | 13420 |
| 0.17 | 13499 | 13578 | 13656 | 13735 | 13813 | 13892 | 13971 | 14049 | 14128 | 14206 |
| 0.18 | 14285 | 14363 | 14442 | 14520 | 14599 | 14677 | 14756 | 14834 | 14912 | 14991 |
| 0.19 | 15069 | 15147 | 15226 | 15304 | 15382 | 15461 | 15539 | 15617 | 15695 | 15774 |
| 0.20 | 15852 | 15930 | 16008 | 16086 | 16165 | 16243 | 16321 | 16399 | 16477 | 16555 |
| 0.21 | 16633 | 16711 | 16789 | 16867 | 16945 | 17023 | 17101 | 17179 | 17257 | 17335 |
| 0.22 | 17413 | 17491 | 17569 | 17646 | 17724 | 17802 | 17880 | 17958 | 18035 | 18113 |
| 0.23 | 18191 | 18269 | 18346 | 18424 | 18502 | 18579 | 18657 | 18734 | 18812 | 18889 |
| 0.24 | 18967 | 19044 | 19122 | 19199 | 19277 | 19354 | 19432 | 19509 | 19587 | 19664 |
| 0.25 | 19741 | 19819 | 19896 | 19973 | 20050 | 20128 | 20205 | 20282 | 20359 | 20436 |
| 0.26 | 20514 | 20591 | 20668 | 20745 | 20822 | 20899 | 20976 | 21053 | 21130 | 21207 |
| 0.27 | 21284 | 21361 | 21438 | 21515 | 21592 | 21668 | 21745 | 21822 | 21899 | 21976 |
| 0.28 | 22052 | 22129 | 22206 | 22282 | 22359 | 22436 | 22512 | 22589 | 22665 | 22742 |
| 0.29 | 22818 | 22895 | 22971 | 23048 | 23124 | 23201 | 23277 | 23353 | 23430 | 23506 |
| 0.30 | 23582 | 23659 | 23735 | 23811 | 23887 | 23963 | 24040 | 24116 | 24192 | 24268 |
| 0.31 | 24344 | 24420 | 24496 | 24572 | 24648 | 24724 | 24800 | 24876 | 24952 | 25027 |
| 0.32 | 25103 | 25179 | 25255 | 25330 | 25406 | 25482 | 25558 | 25633 | 25709 | 25784 |
| 0.33 | 25860 | 25936 | 26011 | 26087 | 26162 | 26237 | 26313 | 26388 | 26464 | 26539 |
| 0.34 | 26614 | 26690 | 26765 | 26840 | 26915 | 26991 | 27066 | 27141 | 27216 | 27291 |
| 0.35 | 27366 | 27441 | 27516 | 27591 | 27666 | 27741 | 27816 | 27891 | 27966 | 28040 |
| 0.36 | 28115 | 28190 | 28265 | 28340 | 28414 | 28489 | 28563 | 28638 | 28713 | 28787 |
| 0.37 | 28862 | 28936 | 29011 | 29085 | 29160 | 29234 | 29308 | 29383 | 29457 | 29531 |
| 0.38 | 29605 | 29680 | 29754 | 29828 | 29902 | 29976 | 30050 | 30124 | 30198 | 30272 |
| 0.39 | 30346 | 30420 | 30494 | 30568 | 30642 | 30716 | 30789 | 30863 | 30937 | 31011 |
| 0.40 | 31084 | 31158 | 31232 | 31305 | 31379 | 31452 | 31526 | 31599 | 31673 | 31746 |
| 0.41 | 31819 | 31893 | 31966 | 32039 | 32113 | 32186 | 32259 | 32332 | 32405 | 32478 |
| 0.42 | 32551 | 32624 | 32697 | 32770 | 32843 | 32916 | 32989 | 33062 | 33135 | 33208 |
| 0.43 | 33280 | 33353 | 33426 | 33499 | 33571 | 33644 | 33716 | 33789 | 33861 | 33934 |
| 0.44 | 34006 | 34079 | 34151 | 34223 | 34296 | 34368 | 34440 | 34512 | 34585 | 34657 |
| 0.45 | 34729 | 34801 | 34873 | 34945 | 35017 | 35089 | 35161 | 35233 | 35305 | 35377 |
| 0.46 | 35448 | 35520 | 35592 | 35664 | 35735 | 35807 | 35878 | 35950 | 36022 | 36093 |
| 0.47 | 36164 | 36236 | 36307 | 36379 | 36450 | 36521 | 36593 | 36664 | 36735 | 36806 |
| 0.48 | 36877 | 36948 | 37019 | 37090 | 37161 | 37232 | 37303 | 37374 | 37445 | 37516 |
| 0.49 | 37587 | 37657 | 37728 | 37799 | 37869 | 37940 | 38011 | 38081 | 38152 | 38222 |
| 0.50 | 38292 | 38363 | 38433 | 38504 | 38574 | 38644 | 38714 | 38785 | 38855 | 38925 |
| 0.51 | 38995 | 39065 | 39135 | 39205 | 39275 | 39345 | 39415 | 39484 | 39554 | 39624 |
| 0.52 | 39694 | 39763 | 39833 | 39903 | 39972 | 40042 | 40111 | 40181 | 40250 | 40319 |
| 0.53 | 40389 | 40458 | 40527 | 40587 | 40666 | 40735 | 40804 | 40873 | 40942 | 41011 |
| 0.54 | 41080 | 41149 | 41218 | 41287 | 41356 | 41425 | 41493 | 41562 | 41631 | 41699 |
| 0.55 | 41768 | 41837 | 41905 | 41974 | 42042 | 42111 | 42179 | 42247 | 42316 | 42384 |
| 0.56 | 42452 | 42520 | 42588 | 42657 | 42725 | 42793 | 42861 | 42929 | 42997 | 43064 |
| 0.57 | 43132 | 43200 | 43268 | 43336 | 43403 | 43471 | 43538 | 43606 | 43674 | 43741 |
| 0.58 | 43809 | 43876 | 43943 | 44011 | 44078 | 44145 | 44212 | 44280 | 44347 | 44414 |
| 0.59 | 44481 | 44548 | 44615 | 44682 | 44749 | 44816 | 44882 | 44949 | 45016 | 45083 |
| 0.60 | 45149 | 45216 | 45283 | 45349 | 45416 | 45482 | 45549 | 45615 | 45681 | 45748 |
| 0.61 | 45814 | 45880 | 45946 | 46012 | 46078 | 46145 | 46211 | 46277 | 46342 | 46408 |
| 0.62 | 46474 | 46540 | 46606 | 46672 | 46737 | 46803 | 46869 | 46934 | 47000 | 47065 |
| 0.63 | 47131 | 47196 | 47261 | 47327 | 47392 | 47457 | 47522 | 47588 | 47653 | 47718 |
| 0.64 | 47783 | 47848 | 47913 | 47978 | 48042 | 48107 | 48172 | 48237 | 48302 | 48366 |

TABLICA NORMALNE RAZDIOBE: FUNKCIJA $\Phi^*$

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.65 | 48431 | 48495 | 48560 | 48624 | 48689 | 48753 | 48818 | 48882 | 48946 | 49010 |
| 0.66 | 49075 | 49139 | 49203 | 49267 | 49331 | 49395 | 49459 | 49523 | 49587 | 49650 |
| 0.67 | 49714 | 49778 | 49842 | 49905 | 49969 | 50032 | 50096 | 50159 | 50223 | 50286 |
| 0.68 | 50350 | 50413 | 50476 | 50539 | 50602 | 50666 | 50729 | 50792 | 50855 | 50918 |
| 0.69 | 50981 | 51043 | 51106 | 51169 | 51232 | 51294 | 51357 | 51420 | 51482 | 51545 |
| 0.70 | 51607 | 51670 | 51732 | 51794 | 51857 | 51919 | 51981 | 52043 | 52105 | 52168 |
| 0.71 | 52230 | 52292 | 52354 | 52415 | 52477 | 52539 | 52601 | 52663 | 52724 | 52786 |
| 0.72 | 52848 | 52909 | 52971 | 53032 | 53093 | 53155 | 53216 | 53277 | 53339 | 53400 |
| 0.73 | 53461 | 53522 | 53583 | 53644 | 53705 | 53766 | 53827 | 53888 | 53947 | 54009 |
| 0.74 | 54070 | 54131 | 54191 | 54252 | 54312 | 54373 | 54433 | 54494 | 54554 | 54614 |
| 0.75 | 54675 | 54735 | 54795 | 54855 | 54915 | 54975 | 55035 | 55095 | 55155 | 55215 |
| 0.76 | 55275 | 55334 | 55394 | 55454 | 55513 | 55573 | 55632 | 55692 | 55751 | 55811 |
| 0.77 | 55870 | 55929 | 55989 | 56048 | 56107 | 56166 | 56225 | 56284 | 56343 | 56402 |
| 0.78 | 56461 | 56520 | 56579 | 56637 | 56696 | 56755 | 56813 | 56872 | 56930 | 56989 |
| 0.79 | 57047 | 57106 | 57164 | 57222 | 57280 | 57339 | 57397 | 57455 | 57513 | 57571 |
| 0.80 | 57629 | 57687 | 57745 | 57803 | 57860 | 57918 | 57976 | 58033 | 58091 | 58148 |
| 0.81 | 58206 | 58263 | 58321 | 58378 | 58436 | 58493 | 58550 | 58607 | 58664 | 58721 |
| 0.82 | 58778 | 58835 | 58892 | 58949 | 59006 | 59063 | 59120 | 59176 | 59233 | 59290 |
| 0.83 | 59346 | 59403 | 59459 | 59516 | 59572 | 59628 | 59685 | 59741 | 59797 | 59853 |
| 0.84 | 59909 | 59965 | 60021 | 60077 | 60133 | 60189 | 60245 | 60300 | 60356 | 60412 |
| 0.85 | 60467 | 60523 | 60579 | 60634 | 60690 | 60745 | 60800 | 60856 | 60911 | 60966 |
| 0.86 | 61021 | 61076 | 61131 | 61186 | 61241 | 61296 | 61351 | 61406 | 61461 | 61515 |
| 0.87 | 61570 | 61625 | 61679 | 61734 | 61788 | 61843 | 61893 | 61951 | 62006 | 62060 |
| 0.88 | 62114 | 62168 | 62222 | 62276 | 62330 | 62384 | 62438 | 62492 | 62546 | 62600 |
| 0.89 | 62653 | 62707 | 62761 | 62814 | 62868 | 62921 | 62975 | 63028 | 63081 | 63135 |
| 0.90 | 63188 | 63241 | 63294 | 63347 | 63400 | 63453 | 63506 | 63559 | 63612 | 63665 |
| 0.91 | 63718 | 63770 | 63823 | 63876 | 63928 | 63981 | 64033 | 64086 | 64138 | 64190 |
| 0.92 | 64243 | 64295 | 64347 | 64399 | 64451 | 64503 | 64555 | 64607 | 64659 | 64711 |
| 0.93 | 64763 | 64815 | 64866 | 64918 | 64970 | 65021 | 65073 | 65124 | 65176 | 65227 |
| 0.94 | 65278 | 65330 | 65381 | 65432 | 65483 | 65534 | 65585 | 65636 | 65687 | 65738 |
| 0.95 | 65789 | 65840 | 65890 | 65941 | 65992 | 66042 | 66093 | 66143 | 66194 | 66244 |
| 0.96 | 66294 | 66345 | 66395 | 66445 | 66495 | 66546 | 66596 | 66646 | 66696 | 66745 |
| 0.97 | 66795 | 66845 | 66895 | 66945 | 66994 | 67044 | 67094 | 67143 | 67193 | 67242 |
| 0.98 | 67291 | 67341 | 67390 | 67439 | 67488 | 67538 | 67587 | 67636 | 67685 | 67734 |
| 0.99 | 67783 | 67831 | 67880 | 67929 | 67978 | 68026 | 68075 | 68124 | 68172 | 68221 |
| 1.0 | 68269 | 68750 | 69227 | 69699 | 70166 | 70628 | 71086 | 71538 | 71986 | 72429 |
| 1.1 | 72867 | 73300 | 73729 | 74152 | 74571 | 74986 | 75395 | 75800 | 76200 | 76595 |
| 1.2 | 76986 | 77372 | 77754 | 78130 | 78502 | 78870 | 79233 | 79592 | 79945 | 80295 |
| 1.3 | 80640 | 80980 | 81316 | 81648 | 81975 | 82298 | 82617 | 82931 | 83241 | 83547 |
| 1.4 | 83849 | 84146 | 84439 | 84728 | 85013 | 85294 | 85571 | 85844 | 86113 | 86370 |
| 1.5 | 86639 | 86896 | 87149 | 87398 | 87644 | 87886 | 88124 | 88358 | 88589 | 88817 |
| 1.6 | 89040 | 89260 | 89477 | 89690 | 89899 | 90106 | 90309 | 90508 | 90704 | 90897 |
| 1.7 | 91087 | 91273 | 91457 | 91637 | 91814 | 91988 | 92159 | 92327 | 92492 | 92655 |
| 1.8 | 92814 | 92970 | 93124 | 93275 | 93423 | 93596 | 93711 | 93852 | 93989 | 94124 |
| 1.9 | 94257 | 94387 | 94514 | 94639 | 94762 | 94882 | 95000 | 95116 | 95230 | 95341 |
| 2.0 | 95450 | 95557 | 95662 | 95764 | 95865 | 95964 | 96060 | 96155 | 96247 | 96338 |
| 2.1 | 96427 | 96514 | 96599 | 96683 | 96765 | 96844 | 96923 | 96999 | 97074 | 97148 |
| 2.2 | 97217 | 97289 | 97358 | 97425 | 97491 | 97555 | 97618 | 97679 | 97739 | 97798 |
| 2.3 | 97855 | 97911 | 97966 | 98019 | 98072 | 98123 | 98173 | 98221 | 98269 | 98315 |
| 2.4 | 98360 | 98405 | 98448 | 98490 | 98531 | 98571 | 98611 | 98649 | 98686 | 98723 |
| 2.5 | 98758 | 98793 | 98826 | 98859 | 98891 | 98923 | 98953 | 98983 | 99012 | 99040 |
| 2.6 | D0678 | D0946 | D1207 | D1462 | D1709 | D1951 | D2186 | D2415 | D2638 | D2855 |
| 2.7 | D3066 | D3272 | D3472 | D3667 | D3856 | D4040 | D4220 | D4394 | D4564 | D4729 |
| 2.8 | D4890 | D5046 | D5198 | D5345 | D5489 | D5628 | D5764 | D5895 | D6023 | D6148 |
| 2.9 | D6268 | D6386 | D6500 | D6610 | D6718 | D6822 | D6924 | D7022 | D7118 | D7210 |
| 3.0 | D7300 | D7388 | D7472 | D7554 | D7634 | D7712 | D7787 | D7859 | D7930 | D7998 |
| 3.1 | D8065 | D8129 | D8191 | D8252 | D8311 | D8367 | D8422 | D8476 | D8527 | D8577 |
| 3.2 | D8626 | D8673 | D8718 | D8762 | D8805 | D8846 | D8886 | D8925 | D8962 | D8998 |
| 3.3 | T0332 | T0670 | T0998 | T1315 | T1622 | T1919 | T2206 | T2483 | T2751 | T3011 |
| 3.4 | T3261 | T3504 | T3738 | T3964 | T4183 | T4394 | T4598 | T4795 | T4986 | T5170 |
| 3.5 | T5347 | T5519 | T5685 | T5844 | T5999 | T6148 | T6291 | T6430 | T6564 | T6693 |
| 3.6 | T6818 | T6938 | T7054 | T7166 | T7274 | T7378 | T7478 | T7574 | T7668 | T7757 |
| 3.7 | T7844 | T7927 | T8008 | T8085 | T8160 | T8232 | T8301 | T8368 | T8432 | T8494 | |
| 3.8 | Ţ8553 | Ţ8610 | Ţ8665 | Ţ8719 | Ţ8770 | Ţ8819 | Ţ8866 | Ţ8912 | Ţ8955 | Ţ8998 |
| 3.9 | Ç0381 | Ç0770 | Ç1145 | Ç1505 | Ç1852 | Ç2185 | Ç2505 | Ç2813 | Ç3108 | Ç3393 |
| 4.0 | C3666 | C3928 | C4180 | C4422 | C4655 | C4878 | C5093 | C5299 | C5496 | C5686 |

# KVANTILI HI-KVADRAT RAZDIOBE:

**Tablica 2.** Kvantili hi-kvadrat razdiobe $\chi_p^2$

| p | 0.001 | 0.005 | 0.01 | 0.02 | 0.025 | 0.05 | 0.10 | 0.20 | 0.25 | 0.30 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0Č157 | 0.Č393 | 0.T157 | 0.T628 | 0.T982 | 0.D393 | 0.0158 | 0.0642 | 0.102 | 0.148 |
| 2 | 0.T200 | 0.0100 | 0.0201 | 0.0404 | 0.0506 | 0.103 | 0.211 | 0.446 | 0.575 | 0.713 |
| 3 | 0.0243 | 0.0717 | 0.115 | 0.185 | 1.216 | 0.352 | 0.584 | 1.005 | 1.213 | 1.424 |
| 4 | 0.0908 | 0.207 | 0.297 | 0.429 | 0.484 | 0.711 | 1.064 | 1.649 | 1.923 | 2.195 |
| 5 | 0.210 | 0.412 | 0.554 | 0.752 | 0.831 | 1.145 | 1.610 | 2.343 | 2.675 | 3.000 |
| 6 | 0.381 | 0.676 | 0.872 | 1.134 | 1.237 | 1.635 | 2.204 | 3.070 | 3.455 | 3.828 |
| 7 | 0.598 | 0.989 | 1.239 | 1.564 | 1.690 | 2.167 | 2.833 | 3.822 | 4.255 | 4.671 |
| 8 | 0.857 | 1.344 | 1.646 | 2.032 | 2.180 | 2.733 | 3.490 | 4.594 | 5.071 | 5.527 |
| 9 | 1.152 | 1.735 | 2.088 | 2.532 | 2.700 | 3.325 | 4.168 | 5.380 | 5.899 | 6.393 |
| 10 | 1.479 | 2.156 | 2.558 | 3.059 | 3.247 | 3.940 | 4.865 | 6.179 | 6.737 | 7.267 |
| 11 | 1.834 | 2.603 | 3.053 | 3.609 | 3.816 | 4.575 | 5.578 | 6.989 | 7.584 | 8.148 |
| 12 | 2.214 | 3.074 | 3.571 | 4.178 | 4.404 | 5.226 | 6.304 | 7.807 | 8.438 | 9.034 |
| 13 | 2.617 | 3.565 | 4.107 | 4.765 | 5.009 | 5.892 | 7.042 | 8.634 | 9.299 | 9.926 |
| 14 | 3.041 | 4.075 | 4.660 | 5.368 | 5.629 | 6.571 | 7.790 | 9.467 | 10.165 | 10.821 |
| 15 | 3.483 | 4.601 | 5.229 | 5.985 | 6.262 | 7.261 | 8.547 | 10.307 | 11.036 | 11.721 |
| 16 | 3.942 | 5.142 | 5.812 | 6.614 | 6.908 | 7.962 | 9.312 | 11.152 | 11.912 | 12.624 |
| 17 | 4.416 | 5.697 | 6.408 | 7.255 | 7.564 | 8.672 | 10.085 | 12.002 | 12.792 | 13.531 |
| 18 | 4.905 | 6.265 | 7.015 | 7.906 | 8.231 | 9.390 | 10.865 | 12.857 | 13.675 | 14.440 |
| 19 | 5.407 | 6.844 | 7.633 | 8.567 | 8.907 | 10.117 | 11.651 | 13.716 | 14.562 | 15.352 |
| 20 | 5.921 | 7.434 | 8.260 | 9.237 | 9.591 | 10.851 | 12.443 | 14.578 | 15.452 | 16.266 |
| 21 | 6.447 | 8.034 | 8.897 | 9.915 | 10.283 | 11.591 | 13.240 | 15.445 | 16.344 | 17.182 |
| 22 | 6.983 | 8.643 | 9.542 | 10.600 | 10.982 | 12.338 | 14.041 | 16.314 | 17.240 | 18.101 |
| 23 | 7.529 | 9.260 | 10.196 | 11.293 | 11.688 | 13.091 | 14.848 | 17.187 | 18.137 | 19.021 |
| 24 | 8.085 | 9.886 | 10.856 | 11.992 | 12.401 | 13.848 | 15.659 | 18.062 | 19.037 | 19.943 |
| 25 | 8.649 | 10.520 | 11.524 | 12.697 | 13.120 | 14.611 | 16.473 | 18.940 | 19.939 | 20.867 |
| 26 | 9.222 | 11.160 | 12.198 | 13.409 | 13.844 | 15.379 | 17.292 | 19.820 | 20.843 | 21.792 |
| 27 | 9.803 | 11.808 | 12.879 | 14.125 | 14.573 | 16.151 | 18.114 | 20.703 | 21.749 | 22.719 |
| 28 | 10.391 | 12.461 | 13.565 | 14.847 | 15.308 | 16.928 | 18.939 | 21.588 | 22.657 | 23.647 |
| 29 | 10.986 | 13.121 | 14.256 | 15.574 | 14.047 | 17.708 | 19.768 | 22.475 | 23.567 | 24.577 |
| 30 | 11.588 | 13.787 | 14.953 | 16.306 | 16.791 | 18.493 | 20.599 | 23.364 | 24.478 | 25.508 |
| $u_p$ | -3.09023 | -2.57583 | -2.32635 | -2.05375 | -1.95996 | -1.64485 | -1.28155 | -0.84162 | -0.67449 | -0.52440 |

**Tablica 2.** Kvantili hi-kvadrat razdiobe $\chi_p^2$

| $p$ | 0.50 | 0.70 | 0.75 | 0.80 | 0.90 | 0.95 | 0.975 | 0.98 | 0.99 | 0.995 | 0.999 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.455 | 1.074 | 1.323 | 1.642 | 2.706 | 3.841 | 5.024 | 5.412 | 6.635 | 7.879 | 10.827 |
| 2 | 1.386 | 2.408 | 2.773 | 3.219 | 4.605 | 5.991 | 7.378 | 7.824 | 9.210 | 10.597 | 13.815 |
| 3 | 2.366 | 3.665 | 4.108 | 4.642 | 6.251 | 7.815 | 9.348 | 9.837 | 11.345 | 12.838 | 16.268 |
| 4 | 3.357 | 4.878 | 5.385 | 5.989 | 7.779 | 9.488 | 11.143 | 11.668 | 13.277 | 14.860 | 18.465 |
| 5 | 4.351 | 6.064 | 6.626 | 7.289 | 9.236 | 11.070 | 12.832 | 13.388 | 15.086 | 16.750 | 20.517 |
| 6 | 5.348 | 7.231 | 7.841 | 8.558 | 10.645 | 12.592 | 14.449 | 15.033 | 16.812 | 18.548 | 22.457 |
| 7 | 6.346 | 8.383 | 9.037 | 9.803 | 12.017 | 14.067 | 16.013 | 16.622 | 18.475 | 20.278 | 24.322 |
| 8 | 7.344 | 9.524 | 10.219 | 11.030 | 13.362 | 15.507 | 17.535 | 18.168 | 20.090 | 21.955 | 26.125 |
| 9 | 8.343 | 10.656 | 11.389 | 12.242 | 14.684 | 16.919 | 19.023 | 19.679 | 21.666 | 23.589 | 27.877 |
| 10 | 9.342 | 11.781 | 12.549 | 13.442 | 15.987 | 18.307 | 20.483 | 21.161 | 23.209 | 25.188 | 29.588 |
| 11 | 10.341 | 12.899 | 13.701 | 14.631 | 17.275 | 19.675 | 21.920 | 22.618 | 24.725 | 26.757 | 31.264 |
| 12 | 11.340 | 14.011 | 14.845 | 15.812 | 18.549 | 21.026 | 23.337 | 24.054 | 26.217 | 28.300 | 32.909 |
| 13 | 12.340 | 15.119 | 15.984 | 16.985 | 19.812 | 22.362 | 24.736 | 25.472 | 27.688 | 29.819 | 34.528 |
| 14 | 13.339 | 16.222 | 17.117 | 18.151 | 21.064 | 23.685 | 26.119 | 26.873 | 29.141 | 31.319 | 36.123 |
| 15 | 14.339 | 17.322 | 18.245 | 19.311 | 22.307 | 24.996 | 27.488 | 28.259 | 30.578 | 32.801 | 37.697 |
| 16 | 15.338 | 18.418 | 19.369 | 20.465 | 23.542 | 26.296 | 28.845 | 29.633 | 32.000 | 34.267 | 39.252 |
| 17 | 16.338 | 19.511 | 20.489 | 21.615 | 24.769 | 27.587 | 30.191 | 30.995 | 33.409 | 35.718 | 40.790 |
| 18 | 17.338 | 20.601 | 21.605 | 22.760 | 25.989 | 28.869 | 31.526 | 32.346 | 34.805 | 37.156 | 42.312 |
| 19 | 18.338 | 21.689 | 22.718 | 23.900 | 27.204 | 30.144 | 32.852 | 33.687 | 36.191 | 38.582 | 43.820 |
| 20 | 19.337 | 22.775 | 23.828 | 25.038 | 28.412 | 31.410 | 34.170 | 35.020 | 37.566 | 39.997 | 45.315 |
| 21 | 20.337 | 23.858 | 24.935 | 26.171 | 29.615 | 32.671 | 35.479 | 36.343 | 38.932 | 41.401 | 46.797 |
| 22 | 21.337 | 24.939 | 26.039 | 27.301 | 30.813 | 33.924 | 36.781 | 37.659 | 40.289 | 42.796 | 48.268 |
| 23 | 22.337 | 26.018 | 27.141 | 28.429 | 32.007 | 35.172 | 38.076 | 38.968 | 41.638 | 44.181 | 49.728 |
| 24 | 23.337 | 27.096 | 28.241 | 29.553 | 33.196 | 36.415 | 39.364 | 40.270 | 42.980 | 45.558 | 51.179 |
| 25 | 24.337 | 28.172 | 29.339 | 30.675 | 34.382 | 37.652 | 40.646 | 41.566 | 44.314 | 46.928 | 52.620 |
| 26 | 25.336 | 29.246 | 30.434 | 31.795 | 35.563 | 38.885 | 41.923 | 42.856 | 45.642 | 48.290 | 54.052 |
| 27 | 26.336 | 30.319 | 31.528 | 32.912 | 36.741 | 40.113 | 43.194 | 44.140 | 46.963 | 49.645 | 55.476 |
| 28 | 27.336 | 31.391 | 32.620 | 34.027 | 37.916 | 41.337 | 44.461 | 45.419 | 48.278 | 50.993 | 56.893 |
| 29 | 28.336 | 32.461 | 33.711 | 35.139 | 39.087 | 42.557 | 45.722 | 46.693 | 49.588 | 52.336 | 58.302 |
| 30 | 29.336 | 33.530 | 34.800 | 36.250 | 40.256 | 43.773 | 46.979 | 47.962 | 50.892 | 53.672 | 59.703 |
| $u_p$ | 0.00000 | 0.52440 | 0.67449 | 0.84162 | 1.28155 | 1.64485 | 1.95996 | 2.05375 | 2.32635 | 2.57583 | 3.08023 |

# KVANTILI STUDENTOVE RAZDIOBE:

**Tablica 3.** Kvantili Studentove razdiobe $t_{1-\alpha/2}$

| | nivo značajnosti $\alpha$ | | | | | | |
|---|---|---|---|---|---|---|---|
| n | 0.90 | 0.8 | 0.70 | 0.60 | 0.50 | 0.40 | 0.30 |
| 1 | 0.158 | 0.325 | 0.510 | 0.727 | 1.000 | 1.376 | 1.963 |
| 2 | 0.142 | 0.289 | 0.445 | 0.617 | 0.816 | 1.061 | 1.386 |
| 3 | 0.137 | 0.277 | 0.424 | 0.584 | 0.765 | 0.978 | 1.250 |
| 4 | 0.134 | 0.271 | 0.414 | 0.569 | 0.741 | 0.941 | 1.190 |
| 5 | 0.132 | 0.267 | 0.408 | 0.559 | 0.727 | 0.920 | 1.156 |
| 6 | 0.131 | 0.265 | 0.404 | 0.553 | 0.718 | 0.906 | 1.134 |
| 7 | 0.130 | 0.263 | 0.402 | 0.549 | 0.711 | 0.896 | 1.119 |
| 8 | 0.130 | 0.262 | 0.399 | 0.546 | 0.706 | 0.889 | 1.108 |
| 9 | 0.129 | 0.261 | 0.398 | 0.543 | 0.703 | 0.883 | 1.100 |
| 10 | 0.129 | 0.260 | 0.397 | 0.542 | 0.700 | 0.879 | 1.093 |
| 11 | 0.129 | 0.260 | 0.396 | 0.540 | 0.697 | 0.876 | 1.088 |
| 12 | 0.128 | 0.259 | 0.395 | 0.539 | 0.695 | 0.873 | 1.083 |
| 13 | 0.128 | 0.259 | 0.394 | 0.538 | 0.694 | 0.870 | 1.079 |
| 14 | 0.128 | 0.258 | 0.393 | 0.537 | 0.692 | 0.868 | 1.076 |
| 15 | 0.128 | 0.258 | 0.393 | 0.536 | 0.691 | 0.866 | 1.074 |
| 16 | 0.128 | 0.258 | 0.392 | 0.535 | 0.690 | 0.865 | 1.071 |
| 17 | 0.128 | 0.257 | 0.392 | 0.534 | 0.689 | 0.863 | 1.069 |
| 18 | 0.127 | 0.257 | 0.392 | 0.534 | 0.688 | 0.862 | 1.067 |
| 19 | 0.127 | 0.257 | 0.391 | 0.533 | 0.688 | 0.861 | 1.066 |
| 20 | 0.127 | 0.257 | 0.391 | 0.533 | 0.687 | 0.860 | 1.064 |
| 21 | 0.127 | 0.257 | 0.391 | 0.532 | 0.686 | 0.859 | 1.063 |
| 22 | 0.127 | 0.256 | 0.390 | 0.532 | 0.686 | 0.858 | 1.061 |
| 23 | 0.127 | 0.256 | 0.390 | 0.532 | 0.685 | 0.858 | 1.060 |
| 24 | 0.127 | 0.256 | 0.390 | 0.531 | 0.685 | 0.857 | 1.059 |
| 25 | 0.127 | 0.256 | 0.390 | 0.531 | 0.684 | 0.856 | 1.058 |
| 26 | 0.127 | 0.256 | 0.390 | 0.531 | 0.684 | 0.855 | 1.058 |
| 27 | 0.127 | 0.256 | 0.389 | 0.531 | 0.684 | 0.855 | 1.057 |
| 28 | 0.127 | 0.256 | 0.389 | 0.530 | 0.683 | 0.855 | 1.056 |
| 29 | 0.127 | 0.256 | 0.389 | 0.530 | 0.683 | 0.854 | 1.055 |
| 30 | 0.127 | 0.256 | 0.389 | 0.530 | 0.683 | 0.854 | 1.055 |
| 40 | 0.126 | 0.255 | 0.388 | 0.529 | 0.681 | 0.851 | 1.050 |
| 60 | 0.126 | 0.254 | 0.387 | 0.527 | 0.679 | 0.848 | 1.046 |
| 120 | 0.126 | 0.254 | 0.386 | 0.526 | 0.677 | 0.845 | 1.041 |
| $u_{1-\alpha/2}$ | 0.126 | 0.253 | 0.385 | 0.524 | 0.674 | 0.842 | 1.036 |

**Tablica 3.** Kvantili Studentove razdiobe $t_{1-\alpha/2}$

| | nivo značajnosti $\alpha$ | | | | | | |
|---|---|---|---|---|---|---|---|
| n | 0.20 | 0.10 | 0.05 | 0.02 | 0.01 | 0.005 | 0.001 |
| 1 | 3.078 | 6.314 | 12.706 | 31.821 | 63.657 | 127.32 | 639.619 |
| 2 | 1.886 | 2.920 | 4.303 | 6.965 | 9.925 | 14.09 | 31.598 |
| 3 | 1.638 | 2.353 | 3.182 | 4.541 | 5.841 | 7.45 | 12.941 |
| 4 | 1.533 | 2.132 | 2.776 | 3.747 | 4.604 | 5.60 | 8.610 |
| 5 | 1.476 | 2.015 | 2.571 | 3.365 | 4.032 | 4.77 | 6.859 |
| 6 | 1.440 | 1.943 | 2.447 | 3.143 | 3.707 | 4.32 | 5.959 |
| 7 | 1.415 | 1.895 | 2.365 | 2.998 | 3.499 | 4.03 | 5.405 |
| 8 | 1.397 | 1.860 | 2.306 | 2.896 | 3.355 | 3.83 | 5.041 |
| 9 | 1.383 | 1.833 | 2.262 | 2.821 | 3.250 | 3.69 | 4.781 |
| 10 | 1.372 | 1.812 | 2.228 | 2.764 | 3.169 | 3.58 | 4.587 |
| 11 | 1.363 | 1.796 | 2.201 | 2.718 | 3.106 | 3.50 | 4.437 |
| 12 | 1.356 | 1.782 | 2.179 | 2.681 | 3.055 | 3.43 | 4.318 |
| 13 | 1.350 | 1.771 | 2.160 | 2.650 | 3.012 | 3.37 | 4.221 |
| 14 | 1.345 | 1.761 | 2.145 | 2.624 | 2.977 | 3.33 | 4.140 |
| 15 | 1.341 | 1.753 | 2.131 | 2.602 | 2.947 | 3.29 | 4.073 |
| 16 | 1.337 | 1.746 | 2.120 | 2.583 | 2.921 | 3.25 | 4.015 |
| 17 | 1.333 | 1.740 | 2.110 | 2.567 | 2.898 | 3.22 | 3.965 |
| 18 | 1.330 | 1.734 | 2.101 | 2.552 | 2.878 | 3.20 | 3.922 |
| 19 | 1.328 | 1.729 | 2.093 | 2.539 | 2.861 | 3.17 | 3.883 |
| 20 | 1.325 | 1.725 | 2.086 | 2.528 | 2.845 | 3.15 | 3.850 |
| 21 | 1.323 | 1.721 | 2.080 | 2.518 | 2.831 | 3.14 | 3.819 |
| 22 | 1.321 | 1.717 | 2.074 | 2.508 | 2.819 | 3.12 | 3.792 |
| 23 | 1.319 | 1.714 | 2.069 | 2.500 | 2.807 | 3.10 | 3.767 |
| 24 | 1.318 | 1.711 | 2.064 | 2.492 | 2.797 | 3.09 | 3.745 |
| 25 | 1.316 | 1.708 | 2.060 | 2.485 | 2.787 | 3.08 | 3.725 |
| 26 | 1.315 | 1.706 | 2.056 | 2.479 | 2.779 | 3.07 | 3.707 |
| 27 | 1.314 | 1.703 | 2.052 | 2.473 | 2.771 | 3.06 | 3.690 |
| 28 | 1.313 | 1.701 | 2.048 | 2.467 | 2.763 | 3.05 | 3.674 |
| 29 | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 | 3.04 | 3.659 |
| 30 | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 | 3.03 | 3.646 |
| 40 | 1.303 | 1.684 | 2.021 | 2.423 | 2.704 | 2.97 | 3.551 |
| 60 | 1.296 | 1.671 | 2.000 | 2.390 | 2.660 | 2.91 | 3.460 |
| 120 | 1.289 | 1.658 | 1.980 | 2.358 | 2.617 | 2.86 | 3.373 |
| $u_{1-\alpha/2}$ | 1.282 | 1.645 | 1.960 | 2.326 | 2.576 | 2.81 | 3.291 |

## KVANTILI STANDARDNE NORMALNE RAZDIOBE:

**Tablica 4.** Kvantili standardne normalne razdiobe $u_p$

| $p$ | $u_p$ | $p$ | $u_p$ | $p$ | $u_p$ |
|---|---|---|---|---|---|
| 0.55 | 0.12566 | 0.92 | 1.40507 | 0.994 | 2.51214 |
| 0.60 | 0.25335 | 0.93 | 1.47579 | 0.995 | 2.57583 |
| 0.65 | 0.38532 | 0.94 | 1.55477 | 0.996 | 2.65207 |
| 0.70 | 0.52440 | 0.95 | 1.64485 | 0.997 | 2.74778 |
| 0.75 | 0.67449 | 0.96 | 1.75069 | 0.9975 | 2.80703 |
| 0.80 | 0.84162 | 0.97 | 1.88079 | 0.998 | 2.87816 |
| 0.82 | 0.91537 | 0.975 | 1.95996 | 0.999 | 3.09023 |
| 0.84 | 0.99446 | 0.98 | 2.05375 | 0.9995 | 3.29053 |
| 0.86 | 1.08032 | 0.99 | 2.32635 | 0.9999 | 3.71901 |
| 0.88 | 1.17499 | 0.991 | 2.36562 | 0.99995 | 3.89059 |
| 0.90 | 1.28155 | 0.992 | 2.40892 | 0.99999 | 4.26489 |
| 0.91 | 0.34076 | 0.993 | 2.45726 | 0.999999 | 4.75342 |

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