1. Reaalarvud ja avaldised

1. Leidke täpne väärtus taskuarvutit kasutamata. ▶Video

a) $4^2;\ -4^2;\ (-4)^2;\ -(-4)^2;\ 4^{-2};\ -4^{-2};\ \frac{3}{4}^2;\ \left(\frac{3}{4}\right)^2;\ \frac{3}{4^2}$

b) $\sqrt{1\frac{9}{16}};\ \sqrt{8^2+6^2};\ \left(\frac{1}{3}+\frac{1}{4}\right)^{-1};\ \left[\frac{3}{4}-\left(\frac{2}{3}\right)^{-1}\right]^{-2};\ \frac{1}{9}\cdot 81^{0{,}25}$

c) $\sqrt{(2-\sqrt{3})^2};\ \sqrt{(1-\sqrt{3})^2};\ \sqrt[3]{(1-\sqrt{2})^3};\ (\sqrt{3}-1)^2$

2. Kumma avaldise väärtus on väiksem, kas $E=\left|\frac{|-5|+3}{6\cdot(-4)}\right|+\frac{|-10|}{|5|-(-1)}$ või $T=81^{\frac{1}{4}}+\left(\frac{1}{3}\right)^{-10}\cdot 27^{-3}$? Mitme protsendi võrra? Kumma avaldise väärtus on suurem? Mitme protsendi võrra? ▶Video

3. Arvutage avaldise täpne väärtus. ▶Video

a) $\sqrt{\frac{1}{3}+\frac{1}{9}}-\left(1\frac{1}{5}+\frac{2}{15}\right)^{-2}\cdot\left(6\frac{3}{4}\right)^{-1}$

b) $-2\cdot\left(\frac{3}{7}\right)^0-\left(\frac{4}{5}\right)^{-1}-\left(-3\frac{1}{3}\right)+(2^{-2}:2^{-4})\cdot(3^3:3^4)$

c) $\frac{3^{-1}-\left(\frac{2}{3}\right)^{-2}}{2-\left(\frac{3}{4}\right)^2}\cdot\left(5^0-\frac{1}{6}\right)^{-1}+2\cdot 10^{-1}$

d) $\left[\left(2\frac{1}{2}\right)^{-2}\cdot(625^{0{,}25}\cdot 25)^2:\frac{125^{0,(6)}\cdot 16^{\frac{13}{4}}}{625^{-0{,}5}\cdot 32^2}\right]^{0,(3)}\cdot\left(\frac{1}{4}\right)^{\frac{1}{3}}$

4. Lihtsustage avaldised. ▶Video

a) $\left(-\frac{3x^4z}{y^2}\right)^3\cdot\left(-\frac{y^5}{18x^{12}z}\right)$

b) $\frac{2x-4y}{5x+8y}\cdot\left(\frac{x}{x-2y}-\frac{8y^2}{4y^2-x^2}:\frac{2y^2}{4y^2+4xy+x^2}\right)$

c) $\left(2\sqrt{a}-\frac{a-b}{a^{0{,}5}-b^{0{,}5}}\right)^{-1}-\frac{1}{\sqrt{a}-\sqrt{b}}$

5. Lihtsustage avaldis $\left(\frac{1}{\sqrt{1-x}}+\sqrt{1+x}\right)^{-1}\cdot\left(1+\sqrt{1-x^2}\right)$ ja arvutage selle väärtus, kui $x=sin^2\frac{\pi}{3}$. ▶Video

6. Lihtsustage avaldis $\left[\frac{3}{5x}-\frac{3}{x-y}\cdot\left(\frac{x-y}{5x}-x+y\right)\right]:\frac{x}{x+y}$ ning arvutage selle väärtus, kui $x=\frac{57}{11+\sqrt{7}}+\frac{19}{7-\sqrt{11}}-\frac{2}{\sqrt{11}+\sqrt{7}}$ ja $y=4^{-1\frac{1}{2}}\cdot 16^{1{,}25}+8\cdot 0{,}16^{-0{,}5}$. Mitme protsendi võrra on saadud avaldise väärtus suurem 10-st? ▶Video

7. Lihtsustage avaldised. ▶Video

a) $\left(\sqrt{3-2\sqrt{2}}-\sqrt{3+2\sqrt{2}}\right)^2$

b) $\left(\frac{a^{\frac{1}{2}}-(\sqrt{a})^3}{a+2a^{\frac{1}{2}}+1}-\sqrt{a}\right):\frac{1-a^{\frac{1}{2}}}{\sqrt{a}}$

c) $\left(\frac{\sqrt{x}+2}{\sqrt{x}-2}+\frac{\sqrt{x}-2}{\sqrt{x}+2}-\frac{16}{x-4}\right)^{-2}$

d) $\frac{81\cdot 3^{2x-1}}{9^{x+1}}+\left(\frac{1}{9}\right)^{-0{,}5}$

VASTUSED:

1. a) $16;\ -16; 16;\ -16;\ \frac{1}{16};\ -\frac{1}{16}; 2\frac{1}{4};\ \frac{9}{16};\ \frac{3}{16}$
b) $1\frac{1}{4}; 10; 1\frac{5}{7}; 1\frac{7}{9};\ \frac{1}{3}$
c) $2-\sqrt{3};\ \sqrt{3}-1; 1-\sqrt{2}; 4-2\sqrt{3}$

2. $E=2;\ T=6; E<T\ \ 66\frac{2}{3}\%; T>E\ \ 200\%$

3. a) $\frac{7}{12}$; b) $1\frac{5}{12}$; c) $-1\frac{2}{5}$; d) $\frac{1}{2}$

4. a) $\frac{3z^2}{2y}$; b) 2 ; c) 0

5. $\sqrt{1-x}$; $x=\frac{3}{4}$; $\frac{1}{2}$

6. $\frac{3(x+y)}{x}=\frac{3x+3y}{x}; x=9; y=24; 11; 10\%$

7. a) 4 ; b) $\frac{2a\sqrt{a}}{1-a}$; c) $\frac{1}{4}$; d) 6