Korjenovanje

1) Izračunaj:

a) $\sqrt{81} =$ b) $\sqrt{\frac{25}{64}} =$ c) $\sqrt{2.25} =$ d) $\sqrt{0.0001 \cdot 100} =$

2) Pojednostavi:

a) $\left(\sqrt{3}\right)^2 =$ b) $\sqrt{7} \cdot \sqrt{7} =$ c) $\left(3\sqrt{2}\right)^2 =$ d) $\left(5 \cdot \sqrt{2}\right)^2 =$

3) Izračunaj:

a) $\sqrt{18} \cdot \sqrt{8} =$ b) $\sqrt{20} : \sqrt{5} =$ c) $\frac{\sqrt{20}}{\sqrt{45}} =$ d) $\frac{\sqrt{72}}{\sqrt{98}} =$

4) Izračunaj:

a) $\sqrt{7} + 3\sqrt{7} - 5\sqrt{7} =$

b) $2\sqrt{5} - 5 + \sqrt{5} - 2 =$

c) $3\sqrt{2} - 5\sqrt{3} + \sqrt{2} - 8\sqrt{2} - \sqrt{3} =$

d) $-\sqrt{5} - \left(2\sqrt{6} - 3\sqrt{5}\right) + 2\left(\sqrt{6} - 4\sqrt{5}\right) =$

4) Izračunaj:

a) $\sqrt{\frac{4}{7}} \cdot \sqrt{\frac{7}{24}} : \sqrt{\frac{1}{6}} =$ b) $\sqrt{1\frac{1}{5}} \cdot \sqrt{\frac{5}{24}} =$ c) $\sqrt{1\frac{1}{2}} : \sqrt{\frac{1}{2}} \cdot \sqrt{1\frac{1}{3}} =$

5) Djelomično korjenuj:

a) $\sqrt{32} =$ b) $\sqrt{162} =$ c) $\sqrt{325} =$ d) $\sqrt{128} =$

6) Izračunaj:

a) $\sqrt{2}\left(\sqrt{5} + 2\sqrt{2} - 1\right) =$

b) $\left(2\sqrt{2} - 3\sqrt{3}\right) \cdot \sqrt{2} =$

c) $\left(\sqrt{6} - 1\right)\left(2\sqrt{6} + 2\right) =$

d) $\left(\sqrt{3} - \sqrt{27}\right)\left(\sqrt{6} + \sqrt{24}\right) =$

e) $\left(\sqrt{6} - 2\sqrt{3}\right)^2 =$

f) $\left(2\sqrt{3} + 2\sqrt{2}\right)^2 =$

g) $\left(\sqrt{2} - 3\sqrt{3}\right)\left(\sqrt{2} + 3\sqrt{3}\right) =$

h) $\left(2\sqrt{3} + 3\sqrt{5}\right)\left(2\sqrt{3} - 3\sqrt{5}\right) =$

7) Izračunaj:

a) $2\sqrt{27} - \sqrt{75} + 5\sqrt{12} - 4\sqrt{3} =$

b) $\left(5\sqrt{27} - 3\sqrt{2}\right) \cdot \sqrt{27} =$

c) $2\sqrt{8} - 2\sqrt{2} + 5\sqrt{18} =$

d) $\left(3\sqrt{5} - 2\sqrt{3}\right) \cdot \sqrt{5} + \sqrt{60} =$

Napomena: Pojednostavni djelomičnim korjenovanjem, pa izračunaj.

8) Izračunaj: $\sqrt{27} \cdot \sqrt{18} \cdot \sqrt{8} - 16\sqrt{12}$.

9) Racionaliziraj nazivnik razlomka:

a) $\frac{\sqrt{3}}{\sqrt{2}} =$ b) $\frac{4}{\sqrt{10}} =$ c) $\frac{3}{2\sqrt{6}} =$ d) $\frac{-3\sqrt{5}}{2\sqrt{2}} =$

10) Izračunaj: $\left(2\sqrt{3} + 3\sqrt{2}\right)^2 - \left(3\sqrt{2} - 2\right)\left(\sqrt{3} + 2\sqrt{2}\right) + \left(2 - 3\sqrt{3}\right) \cdot \sqrt{2} =$

Korjenovanje - RJEŠENJA

1) Izračunaj:

a) $\sqrt{81}=9,$ b) $\sqrt{\frac{25}{64}}=\frac{5}{8},$ c) $\sqrt{2.25}=1.5,$ d) $\sqrt{0.0001\cdot 100}=\sqrt{0.01}=0.1.$

2) Pojednostavi:

a) $\left(\sqrt{3}\right)^2=3,$ b) $\sqrt{7}\cdot\sqrt{7}=7,$ c) $\left(3\sqrt{2}\right)^2=9\cdot 2=18,$ d) $\left(5\cdot\sqrt{2}\right)^2=25\cdot 2=50.$

3) Izračunaj:

a) $\sqrt{18}\cdot\sqrt{8}=\sqrt{144}=12,$ b) $\sqrt{20}:\sqrt{5}=\sqrt{4}=2,$

c) $\frac{\sqrt{20}}{\sqrt{45}}=\sqrt{\frac{20^{4}}{45_{9}}}=\sqrt{\frac{4}{9}}=\frac{2}{3},$ d) $\frac{\sqrt{72}}{\sqrt{98}}=\sqrt{\frac{72^{36}}{98_{49}}}=\sqrt{\frac{36}{49}}=\frac{6}{7}$

4) Izračunaj:

a) $\sqrt{7}+3\sqrt{7}-5\sqrt{7}=-\sqrt{7}$

b) $2\sqrt{5}-5+\sqrt{5}-2=3\sqrt{5}-7$

c) $3\sqrt{2}-5\sqrt{3}+\sqrt{2}-8\sqrt{2}-\sqrt{3}=-4\sqrt{2}-6\sqrt{3}$

d) $-\sqrt{5}-\left(2\sqrt{6}-3\sqrt{5}\right)+2\left(\sqrt{6}-4\sqrt{5}\right)=-\sqrt{5}-2\sqrt{6}+3\sqrt{5}+2\sqrt{6}-8\sqrt{5}$
$=-6\sqrt{5}$

4) Izračunaj:

a) $\sqrt{\frac{4}{7}}\cdot\sqrt{\frac{7}{24}}:\sqrt{\frac{1}{6}}=\sqrt{\frac{4^{1}}{7_{1}}\cdot\frac{7^{1}}{24_{4_1}}\cdot\frac{6^{1}}{1}}=\sqrt{1}=1$

b) $\sqrt{1\frac{1}{5}}\cdot\sqrt{\frac{5}{24}}=\sqrt{\frac{{}^{1}6}{{}_{1}5}\cdot\frac{5^{1}}{24_{4}}}=\sqrt{\frac{1}{4}}=\frac{1}{2}$

c) $\sqrt{1\frac{1}{2}}:\sqrt{\frac{1}{2}}\cdot\sqrt{1\frac{1}{3}}=\sqrt{\frac{{}^{1}3}{{}_{1}2}\cdot\frac{2^{1}}{1}\cdot\frac{4}{3_{1}}}=\sqrt{4}=2$

5) Djelomično korjenuj:

a) $\sqrt{32}=\sqrt{16\cdot 2}=4\sqrt{2}$ b) $\sqrt{162}=\sqrt{2\cdot 81}=9\sqrt{2}$

c) $\sqrt{325}=\sqrt{5\cdot 5\cdot 13}=5\sqrt{13}$ d) $\sqrt{128}=\sqrt{2\cdot 64}=8\sqrt{2}$

6) Izračunaj:

a) $\sqrt{2}\left(\sqrt{5}+2\sqrt{2}-1\right)=\sqrt{10}-\sqrt{2}+4$ ... ***broj množi zagradu***

b) $\left(2\sqrt{2}-3\sqrt{3}\right)\cdot\sqrt{2}=4-3\sqrt{6}$ ... ***broj množi zagradu***

c) $\left(\sqrt{6}-1\right)\left(2\sqrt{6}+2\right)=10$ ... ***množimo svaki sa svakim***

d) $\left(\sqrt{3}-\sqrt{27}\right)\left(\sqrt{6}+\sqrt{24}\right)=\left(\sqrt{3}-3\sqrt{3}\right)\left(\sqrt{6}+4\sqrt{6}\right)$ ... ***djelomičmo korjenovanje ili množimo svaki sa svakim***

$$= -2\sqrt{3}\cdot 5\sqrt{6}$$
$$= -10\sqrt{18} = -10\sqrt{9\cdot 2}$$
$$= -30\sqrt{2}$$

e) $\left(\sqrt{6}-2\sqrt{3}\right)^2 = (\sqrt{6})^2 - 2\cdot\sqrt{6}\cdot 2\sqrt{3} + \left(2\sqrt{3}\right)^2$ ... ***kvadrat binoma***

$$= 6 - 4\sqrt{18} + 4\cdot 3$$
$$= 18 - 4\sqrt{9\cdot 2}$$
$$= 18 - 4\cdot 3\sqrt{2}$$
$$= 18 - 12\sqrt{2}$$

f) $\left(2\sqrt{3}+2\sqrt{2}\right)^2 = 20+8\sqrt{6}$ ... ***kvadrat binoma***

g) $\left(\sqrt{2}-3\sqrt{3}\right)\left(\sqrt{2}+3\sqrt{3}\right)=2-27=-25$ ... ***razlika kvadrata***

h) $\left(2\sqrt{3}+3\sqrt{5}\right)\left(2\sqrt{3}-3\sqrt{5}\right)=12-45=-33$ ... ***razlika kvadrata***

7) Izračunaj:

a) $2\sqrt{27}-\sqrt{75}+5\sqrt{12}-4\sqrt{3} = 2\cdot 3\sqrt{3}-5\sqrt{3}+5\cdot 2\sqrt{3}-4\sqrt{3}$
$$= 7\sqrt{3}$$

b) $\left(5\sqrt{27}-3\sqrt{2}\right)\cdot\sqrt{27} = \left(15\sqrt{3}-3\sqrt{2}\right)\cdot 3\sqrt{3}$
$$= 135 - 9\sqrt{6}$$

c) $2\sqrt{8}-2\sqrt{2}+5\sqrt{18} = 4\sqrt{2}-2\sqrt{2}+15\sqrt{2}$
$$= 17\sqrt{2}$$

d) $\left(3\sqrt{5}-2\sqrt{3}\right)\cdot\sqrt{5}+\sqrt{60} = 15-2\sqrt{15}+2\sqrt{15}$
$$= 15$$

Napomena: Pojednostavni djelomičnim korjenovanjem, pa izračunaj.

8) Izračunaj:

$$\sqrt{27}\cdot\sqrt{18}\cdot\sqrt{8}-16\sqrt{12} = 3\sqrt{3}\cdot 3\sqrt{2}\cdot 2\sqrt{2}-16\cdot 2\sqrt{3}$$
$$= 18\cdot 2\cdot\sqrt{3}-32\sqrt{3}$$
$$= 4\sqrt{3}$$

9) Racionaliziraj nazivnik razlomka:

a) $\frac{\sqrt{3}}{\sqrt{2}} = \frac{\sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{6}}{2}$ b) $\frac{4}{\sqrt{10}} = \frac{2\sqrt{10}}{5}$ c) $\frac{3}{2\sqrt{6}} = \frac{\sqrt{6}}{4}$ d) $\frac{-3\sqrt{5}}{2\sqrt{2}} = \frac{-3\sqrt{10}}{4}$

10) Izračunaj:

$$\left(2\sqrt{3}+3\sqrt{2}\right)^2 - \left(3\sqrt{2}-2\right)\left(\sqrt{3}+2\sqrt{2}\right) + \left(2-3\sqrt{3}\right)\cdot\sqrt{2} = 6\sqrt{6}+2\sqrt{3}+6\sqrt{2}+18$$