

Korjenovanje

1) Izračunaj:

a) $\sqrt{81} =$

b) $\sqrt{\frac{25}{64}} =$

c) $\sqrt{2.25} =$

d) $\sqrt{0.0001 \cdot 100} =$

2) Pojednostavi:

a) $(\sqrt{3})^2 =$

b) $\sqrt{7} \cdot \sqrt{7} =$

c) $(3\sqrt{2})^2 =$

d) $(5 \cdot \sqrt{2})^2 =$

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

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

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

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

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

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

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

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

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

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

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

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

7) Izračunaj:

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

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

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

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

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: $(2\sqrt{3} + 3\sqrt{2})^2 - (3\sqrt{2} - 2)(\sqrt{3} + 2\sqrt{2}) + (2 - 3\sqrt{3}) \cdot \sqrt{2} =$

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) $(\sqrt{3})^2 = 3,$

b) $\sqrt{7} \cdot \sqrt{7} = 7,$

c) $(3\sqrt{2})^2 = 9 \cdot 2 = 18,$

d) $(5 \cdot \sqrt{2})^2 = 25 \cdot 2 = 50.$

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

4) Izračunaj:

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

b) $\sqrt{1\frac{1}{5}} \cdot \sqrt{\frac{5}{24}} = \sqrt{\frac{1^1 \cdot 5^1}{5^1 \cdot 24_{4_1}}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$

c) $\sqrt{1\frac{1}{2}} : \sqrt{\frac{1}{2}} \cdot \sqrt{1\frac{1}{3}} = \sqrt{\frac{1^1 \cdot 2^1 \cdot 4}{2^1 \cdot 1 \cdot 3_1}} = \sqrt{4} = 2$

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) $\sqrt{2}(\sqrt{5} + 2\sqrt{2} - 1) = \sqrt{10} - \sqrt{2} + 4$

... broj množi zagradu

b) $(2\sqrt{2} - 3\sqrt{3}) \cdot \sqrt{2} = 4 - 3\sqrt{6}$

... broj množi zagradu

c) $(\sqrt{6} - 1)(2\sqrt{6} + 2) = 10$

... množimo svaki sa svakim

d) $(\sqrt{3} - \sqrt{27})(\sqrt{6} + \sqrt{24}) = (\sqrt{3} - 3\sqrt{3})(\sqrt{6} + 4\sqrt{6})$
 $= -2\sqrt{3} \cdot 5\sqrt{6}$
 $= -10\sqrt{18} = -10\sqrt{9 \cdot 2}$
 $= -30\sqrt{2}$

... djelomično korjenovanje ili množimo svaki sa svakim

e) $(\sqrt{6} - 2\sqrt{3})^2 = 72 - 4\sqrt{18}$
 $= 72 - 12\sqrt{2}$

... kvadrat binoma

$$\begin{aligned} \text{f) } (2\sqrt{3} + 2\sqrt{2})^2 &= 20 + 8\sqrt{6} && \dots \text{ kvadrat binoma} \\ \text{g) } (\sqrt{2} - 3\sqrt{3})(\sqrt{2} + 3\sqrt{3}) &= 2 - 27 = -25 && \dots \text{ razlika kvadrata} \\ \text{h) } (2\sqrt{3} + 3\sqrt{5})(2\sqrt{3} - 3\sqrt{5}) &= 12 - 45 = -33 && \dots \text{ razlika kvadrata} \end{aligned}$$

7) Izračunaj:

$$\begin{aligned} \text{a) } 2\sqrt{27} - \sqrt{75} + 5\sqrt{12} - 4\sqrt{3} &= 2 \cdot 3\sqrt{3} - 5\sqrt{3} + 5 \cdot 2\sqrt{3} - 4\sqrt{3} \\ &= 7\sqrt{3} \end{aligned}$$

$$\begin{aligned} \text{b) } (5\sqrt{27} - 3\sqrt{2}) \cdot \sqrt{27} &= (15\sqrt{3} - 3\sqrt{2}) \cdot 3\sqrt{3} \\ &= 135 - 9\sqrt{6} \end{aligned}$$

$$\begin{aligned} \text{c) } 2\sqrt{8} - 2\sqrt{2} + 5\sqrt{18} &= 4\sqrt{2} - 2\sqrt{2} + 15\sqrt{2} \\ &= 17\sqrt{2} \end{aligned}$$

$$\begin{aligned} \text{d) } (3\sqrt{5} - 2\sqrt{3}) \cdot \sqrt{5} + \sqrt{60} &= 15 - 2\sqrt{15} + 2\sqrt{15} \\ &= 15 \end{aligned}$$

Napomena: Pojednostavni djelomičnim korjenovanjem, pa izračunaj.

8) Izračunaj:

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

9) Racionaliziraj nazivnik razlomka:

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

10) Izračunaj:

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