

DELOVNI LIST 4- POTENCE IN KORENI

POTENCE

1. Izračunaj:

$$a) (a^2 b^{-3})^2 \cdot (b^2 a^{-3})^3 : (a^{-5})^2 = \quad b) (3a^3 b^2 x^{-5})^2 \cdot (2a^{-2} b^{-3} x^3)^3 : (2b^{-1})^4 =$$

2. Izračunaj:

$$a) 9^{a-2} \cdot 3^{(a-1)^2} \cdot (3^a)^{a-3} = \quad b) 3^{2x^2-3} \cdot (4^{x-1})^{x+1} \cdot 2^{-1} : (36^x)^x =$$

$$c) 5 \cdot 25^{(2x-3)^2} \cdot 5^{x^2-7} \cdot (125^x)^{4-x} : (5^{2x-1})^{2x} =$$

3. Izpostavi skupni faktor in skrči:

$$a) 5^{x+1} - 2 \cdot 5^x + 3 \cdot 5^{x-1} = \quad b) 3^{x+2} - 5 \cdot 3^x - 9 \cdot 3^{x-1} =$$

$$c) 3 \cdot 2^{2x+1} - 21 \cdot 2^{2x-1} + 8 \cdot 2^{2x-4} =$$

4. Okrajšaj ulomek:

$$a) \frac{2^{2x+3} + 5 \cdot 2^{2x+1} - 6 \cdot 2^{2x-1}}{5 \cdot 2^{2x-3}} = \quad b) \frac{5 \cdot 2^{x-1} - 2^x + 3 \cdot 2^{x+1}}{2^x - 4 \cdot 2^{x-1}} =$$

$$c) \frac{2^{x+3} - 3 \cdot 2^{x+1} + 11 \cdot 2^{x-1}}{2^{x-1} - 3 \cdot 2^{x-4}} =$$

5. Seštej ulomke:

$$a) \frac{x^2 - 9}{x^{n+1} - 3x^n} - \frac{x^2 - 4}{x^{n+1} + 2x^n} = \quad b) \frac{1-x}{x^{n+1}} - \frac{x^2 - x^{-1}}{x^n} + \frac{1}{x^{n-2}} =$$

$$c) \frac{24}{a^{x+2} - 4a^x} + \frac{9}{a^{x+1} + 2a^x} - \frac{6}{a^{x+1} - 2a^x} =$$

6. Skrči kolikor je mogoče:

$$a) (1 + (1 + (1 + a^{-1})^{-1})^{-1})^{-1} =$$

$$b) ((a^{-1} - 1)^{-1} - 1)^{-1} + a^{x-1} : (2a^{x-1} + a^{x-2}) =$$

$$c) ((1 - 2a^{-1})^{-1} - (a^{-2} - (1 - a^{-1})^2)^{-1})^{-1} =$$

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7. Pomnoži in skrči:

$$\text{a) } \sqrt[4]{a^3 b^2} \cdot \sqrt[3]{a^{-2} b} \cdot \sqrt[12]{a^{-5} b^6} = \quad \text{b) } \sqrt[3]{a^4 b^{-2}} \cdot \sqrt[3]{4ab^{-1}} \cdot \sqrt[6]{a^5} : \sqrt[4]{a^3 b^{-3}} =$$

$$\text{c) } \frac{\sqrt[3]{a^2 b^{-2}} \cdot \sqrt{ab^3}}{\sqrt{a} \cdot \sqrt[3]{a^{-5} b^8}} = \quad \text{d) } \sqrt[3]{\sqrt{b} \cdot \sqrt[4]{a^3 b^3}} \cdot \sqrt[6]{ab^{-1}} : \sqrt[4]{a^3 \cdot \sqrt[3]{b} \cdot \sqrt{ab}} =$$

8. Potenciraj, zmnoži in skrči:

$$\text{a) } (9 + 4\sqrt{5}) \cdot (2 - \sqrt{5})^2 = \quad \text{b) } (1 - \sqrt{3})^2 \cdot (4 + 2\sqrt{3}) =$$

$$\text{c) } (\sqrt{3} - \sqrt{2})^2 \cdot (5 + 2\sqrt{6}) =$$

9. Izračunaj:

$$\text{a) } 9^{\frac{3}{2}} \cdot 8^{\frac{-1}{3}} - \sqrt{16^{\frac{5}{4}} - 7} = \quad \text{b) } 4^{\frac{3}{2}} \cdot 8^{\frac{-1}{3}} - \sqrt{9^{\frac{3}{2}} - 2 \cdot 27^{\frac{2}{3}}} =$$

$$\text{c) } 4^{\frac{3}{2}} \cdot 9^{\frac{-1}{2}} + \sqrt{16^{\frac{3}{4}} + 1} =$$

10. Racionaliziraj - odpravi korene iz imenovalca in skrči:

$$\text{a) } \frac{\sqrt{15}}{\sqrt{5} - \sqrt{3}} = \quad \text{b) } \frac{20 + 10\sqrt{2}}{2\sqrt{5} - \sqrt{10}} = \quad \text{c) } \frac{3\sqrt{10}}{4\sqrt{5} - 5\sqrt{2}} =$$

11. Izračunaj:

$$\text{a) } \frac{2}{\sqrt{3} - 1} + \frac{2}{\sqrt{3} - 2} - \frac{6}{\sqrt{3} - 3} = \quad \text{b) } \frac{3}{4\sqrt{5} - 5\sqrt{2}} + \frac{4}{\sqrt{6} + \sqrt{2}} =$$

$$\text{c) } \frac{2\sqrt{2+a}}{\sqrt{2-a}} - \frac{a\sqrt{2-a}}{\sqrt{2+a}} - \frac{2a^2}{\sqrt{4-a^2}} =$$

12. Izračunaj (delno koreni, racionaliziraj in skrči):

$$\text{a) } \sqrt{28} + 2\sqrt{75} - 3\sqrt{63} + 4 \cdot \sqrt[6]{27} =$$

$$\text{b) } (\sqrt{24} + 5\sqrt{27} - 11 \cdot \sqrt[8]{81} + \sqrt{12} - \sqrt{150}) : (2 - \sqrt{2}) =$$

$$\text{c) } \sqrt{\frac{4}{5}} \cdot \sqrt{\frac{15}{2} \cdot \sqrt[6]{1 - \left(\frac{2}{3}\right)^2}} + \frac{\sqrt{20}}{1 + \sqrt{5}} - 3 \cdot \sqrt[3]{\frac{5}{9}} =$$