

**ESERCIZI ASSEGNATI PER LE VACANZE NATALIZIE**

 TRASPORTO DI UN FATTORE SOTTO IL SEGNO DI RADICE IN  $\mathbb{R}_0^+$ 

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$$9. \quad \frac{2}{a^2} \sqrt{\frac{3}{4}} = \frac{2}{a^2} \cdot \frac{3^{\frac{1}{2}}}{2^{\frac{1}{2}}} = \frac{3^{\frac{1}{2}}}{a^2} = \sqrt{\frac{3}{a^4}} \qquad \frac{2}{a^2} \sqrt[3]{\frac{a^4}{16b}} = \frac{2}{a^2} \cdot \frac{a^{\frac{4}{3}}}{2^{\frac{4}{3}} b^{\frac{1}{3}}} = \frac{1}{2^{\frac{1}{3}} a^{\frac{2}{3}} b^{\frac{1}{3}}} = \sqrt[3]{\frac{1}{2a^2b}}$$

$$-a^4 \sqrt[5]{\frac{1}{a^2}} = -a^4 \cdot \frac{1}{a^{\frac{2}{5}}} = -a^{\frac{18}{5}} = -\sqrt[5]{a^{18}}$$

$$10. \quad a \sqrt{\frac{1}{a}} = \frac{a}{a^{\frac{1}{2}}} = a^{\frac{1}{2}} = \sqrt{a} \qquad 2a \sqrt{\frac{3}{2a}} = 2a \cdot \frac{3^{\frac{1}{2}}}{2^{\frac{1}{2}} a^{\frac{1}{2}}} = 2^{\frac{1}{2}} a^{\frac{1}{2}} 3^{\frac{1}{2}} = \sqrt{6a}$$

$$12. \quad \frac{1}{x-2} \sqrt{x-2} = \frac{(x-2)^{\frac{1}{2}}}{x-2} = \frac{1}{(x-2)^{\frac{1}{2}}} = \sqrt{\frac{1}{x-2}}$$

$$\frac{1}{x-3} \sqrt{3-x} = \frac{(3-x)^{\frac{1}{2}}}{-(3-x)} = -\frac{1}{(3-x)^{\frac{1}{2}}} = -\sqrt{\frac{1}{3-x}}$$

$$(a-2) \sqrt{\frac{1}{2a-4}} = \frac{a-2}{2^{\frac{1}{2}} (a-2)^{\frac{1}{2}}} = \frac{(a-2)^{\frac{1}{2}}}{2^{\frac{1}{2}}} = \sqrt{\frac{a-2}{2}}$$

$$13. \quad \frac{1}{b-a} \sqrt[4]{(a-b)^3} = \frac{(a-b)^{\frac{3}{4}}}{-(a-b)} = -\frac{1}{(a-b)^{\frac{1}{4}}} = -\sqrt[4]{\frac{1}{a-b}}$$

$$\frac{1}{(3-x)(x-2)} \sqrt{(x-3)(x-2)} = \frac{(x-3)^{\frac{1}{2}} (x-2)^{\frac{1}{2}}}{-(x-3)(x-2)} = -\frac{1}{(x-3)^{\frac{1}{2}} (x-2)^{\frac{1}{2}}} = -\sqrt{\frac{1}{(x-3)(x-2)}}$$

$$14. \quad \frac{1}{(2-x)(5-x)} \sqrt{(x-2)(x-5)} = \frac{(x-2)^{\frac{1}{2}} (x-5)^{\frac{1}{2}}}{(x-2)(x-5)} = \frac{1}{(x-2)^{\frac{1}{2}} (x-5)^{\frac{1}{2}}} = \sqrt{\frac{1}{(x-2)(x-5)}}$$

$$\frac{x-2}{x-3} \sqrt{\frac{x-3}{2-x}} = \frac{-(2-x)}{x-3} \cdot \frac{(x-3)^{\frac{1}{2}}}{(2-x)^{\frac{1}{2}}} = -\frac{(2-x)^{\frac{1}{2}}}{(x-3)^{\frac{1}{2}}} = -\sqrt{\frac{2-x}{x-3}}$$

$$15. \quad 2^3 \sqrt[n]{8} = 2^3 \cdot 2^{\frac{3}{n}} = 2^{\frac{3n+3}{n}} = \sqrt[n]{2^{3n+3}}$$

$$3^n \sqrt[n]{3} = 3^n \cdot 3^{\frac{1}{n}} = 3^{\frac{n^2+1}{n}} = \sqrt[n]{3^{n^2+1}}$$

$$2^{n+1} \sqrt[n+1]{4} = 2 \cdot 2^{\frac{2}{n+1}} = 2^{\frac{n+1+2}{n+1}} = \sqrt[n+1]{2^{n+3}}$$

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$$3. \quad \sqrt[3]{16} = 2^{\frac{4}{3}} = 2^{1+\frac{1}{3}} = 2 \sqrt[3]{2} \qquad \sqrt[3]{81} = 3^{\frac{4}{3}} = 3^{1+\frac{1}{3}} = 3 \sqrt[3]{3}$$

$$\sqrt[4]{32} = 2^{\frac{5}{4}} = 2^{1+\frac{1}{4}} = 2 \sqrt[4]{2} \qquad \sqrt[3]{125a} = 5^{\frac{3}{3}} a^{\frac{1}{3}} = 5 \sqrt[3]{a}$$

$$\sqrt[4]{625 a^2 b} = 5^{\frac{4}{4}} a^{\frac{2}{4}} b^{\frac{1}{4}} = 5 \sqrt[4]{a^2 b}$$

$$4. \quad \sqrt[3]{54} = 2^{\frac{1}{3}} \cdot 3^{\frac{3}{3}} = 3 \sqrt[3]{2} \qquad \sqrt[3]{48} = 2^{\frac{4}{3}} \cdot 3^{\frac{1}{3}} = 2^{1+\frac{1}{3}} \cdot 3^{\frac{1}{3}} = 2 \sqrt[3]{6}$$

$$\sqrt[3]{135} = 5^{\frac{1}{3}} \cdot 3^{\frac{3}{3}} = 3 \sqrt[3]{5} \qquad \sqrt[3]{24} = 3^{\frac{1}{3}} \cdot 2^{\frac{3}{3}} = 2 \sqrt[3]{3}$$

$$\sqrt[5]{64a^4} = 2^{\frac{6}{5}} a^{\frac{4}{5}} = 2^{1+\frac{1}{5}} a^{\frac{4}{5}} = 2 \sqrt[5]{2a^4}$$

$$5. \quad \sqrt{0,04 a} = 0,2^{\frac{2}{2}} a^{\frac{1}{2}} = 0,2 \sqrt{a}$$

$$\sqrt{\frac{1}{4} + \frac{1}{9}} = \sqrt{\frac{13}{36}} = 13^{\frac{1}{2}} \cdot 6^{-\frac{2}{2}} = \frac{\sqrt{13}}{6}$$

$$\sqrt{\frac{1}{5} + \frac{3}{25}} = \sqrt{\frac{8}{25}} = 2^{\frac{3}{2}} \cdot 5^{-\frac{2}{2}} = 2^{1+\frac{1}{2}} \cdot 5^{-1} = \frac{2}{5} \sqrt{2}$$

$$\sqrt[3]{0,027 a^2} = 0,3^{\frac{3}{3}} a^{\frac{2}{3}} = 0,3 \sqrt[3]{a^2}$$

$$6. \quad \sqrt{4ax^4} = 2^{\frac{2}{2}} a^{\frac{1}{2}} x^{\frac{4}{2}} = 2x^2 \sqrt{a}$$

$$\sqrt{9a^2 b} = 3^{\frac{2}{2}} a^{\frac{2}{2}} b^{\frac{1}{2}} = 3a \sqrt{b}$$

$$\sqrt{50 a^2 b x^6} = 2^{\frac{1}{2}} \cdot 5^{\frac{2}{2}} a^{\frac{2}{2}} b^{\frac{1}{2}} x^{\frac{6}{2}} = 5ax^3 \sqrt{2b}$$

$$\sqrt[3]{24 a^3} = 2^{\frac{3}{3}} \cdot 3^{\frac{1}{3}} a^{\frac{3}{3}} = 2a \sqrt[3]{3}$$

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$$16. \quad \sqrt[3]{16(a+b)^4} = 2^{\frac{4}{3}} (a+b)^{\frac{4}{3}} = 2^{1+\frac{1}{3}} (a+b)^{1+\frac{1}{3}} = 2(a+b) \sqrt[3]{2(a+b)}$$

$$\sqrt{\frac{25 a^3 b^2}{c^5}} = \frac{5^{\frac{2}{2}} a^{\frac{3}{2}} b^{\frac{2}{2}}}{c^{\frac{5}{2}}} = \frac{5 a^{1+\frac{1}{2}} b}{c^{2+\frac{1}{2}}} = \frac{5ab}{c^2} \sqrt{\frac{a}{c}}$$

$$\sqrt[5]{\frac{a^5 b^{10}}{(a+b)^2}} = \frac{a^{\frac{5}{5}} b^{\frac{10}{5}}}{(a+b)^{\frac{2}{5}}} = \frac{a b^2}{\sqrt[5]{(a+b)^2}}$$

$$18. \quad \sqrt[3]{\frac{(a^2+1)^2 (a^4-1)}{27 a^4}} = \sqrt[3]{\frac{(a^2+1)^2 (a^2-1)(a^2+1)}{27 a^4}} = \frac{(a^2-1)^{\frac{1}{3}} (a^2+1)^{\frac{3}{3}}}{3^{\frac{3}{3}} a^{\frac{4}{3}}} = \frac{(a^2+1)}{3a} \sqrt[3]{\frac{(a^2-1)}{a}}$$

$$\sqrt[3]{\frac{(a^2-b^2)^4}{81(a+b)}} = \sqrt[3]{\frac{(a-b)^4 (a+b)^4}{3^4 (a+b)}} = \sqrt[3]{\frac{(a-b)^4 (a+b)^3}{3^4}} = \frac{(a-b)^{\frac{4}{3}} (a+b)^{\frac{3}{3}}}{3^{\frac{4}{3}}} = \frac{(a+b)(a-b)}{3} \sqrt[3]{\frac{a-b}{3}}$$

$$19. \quad \sqrt{(a^2+b^6)c} \neq (a+b^3) \sqrt{c}, \text{ perché: } a^2+b^6 \neq (a+b^3)^2, \text{ infatti: } (a+b^3)^2 = a^2+2ab^3+b^6$$