

Aplicatii

Sa se efectueze

$$\sqrt[m]{a^m} = a^{\frac{m}{m}} \quad a^m \cdot a^n = a^{m+n} \quad a^{-n} = \frac{1}{a^n}$$

$$\begin{aligned} a) \quad 5^{\frac{3}{2}} \cdot 125^{\frac{1}{2}} \cdot 5^{\frac{1}{5}} \cdot 25^{-0,4} &= \sqrt{5^3} \cdot \sqrt{125} \cdot \sqrt[5]{5^4} \cdot 25^{-\frac{2}{5}} = \\ &= \sqrt{5^3 \cdot 125} \cdot \sqrt[5]{5^4} \cdot \frac{1}{\sqrt[5]{25^2}} = \sqrt{5^3 \cdot 5^3} \cdot \sqrt[5]{\frac{5^4}{(5^2)^2}} = \\ &= \sqrt{(5^3)^2} \cdot \sqrt[5]{\frac{5^4}{5^4}} = 5^3 \end{aligned}$$

$0,4 = \frac{4}{10} = \frac{2}{5}$
 $\begin{array}{r} 125 \quad 5 \\ 25 \quad 5 \\ 5 \quad 5 \\ 1 \end{array}$

$$\begin{aligned} 5^{\frac{3}{2}} \cdot 125^{\frac{1}{2}} \cdot 5^{\frac{1}{5}} \cdot 25^{-0,4} &= 5^{\frac{3}{2}} \cdot (5^3)^{\frac{1}{2}} \cdot 5^{\frac{1}{5}} \cdot (5^2)^{-\frac{2}{5}} = 5^{\frac{3}{2}} \cdot 5^{\frac{3}{2}} \cdot 5^{\frac{1}{5}} \cdot 5^{-\frac{4}{5}} = \\ &= 5^{\frac{3}{2} + \frac{3}{2} + \frac{1}{5} - \frac{4}{5}} = 5^{3 + \frac{2}{5} - \frac{4}{5}} = 5^3 \end{aligned}$$

$$\begin{aligned} b) \quad 81^{-\frac{3}{4}} \cdot 27^{-\frac{2}{3}} \cdot \left(\frac{1}{0,1(3)}\right)^5 &= (3^4)^{-\frac{3}{4}} \cdot (3^3)^{-\frac{2}{3}} \cdot \left(\frac{1}{\frac{1}{3}}\right)^5 = \\ &= 3^{\cancel{-3} \cdot \cancel{4}} \cdot 3^{\cancel{-2} \cdot \cancel{3}} \cdot 3^5 = 3^{-3-2+5} = 3^0 = 1 \end{aligned}$$

$$\begin{array}{r} 81 \quad 3 \\ 27 \quad 3 \\ 9 \quad 3 \\ 3 \quad 3 \\ 1 \end{array}$$

$$0,1(3) = \frac{3}{9} = \frac{1}{3}$$

$$(a^n)^m = a^{n \cdot m}$$

$$\begin{aligned} c) \quad \frac{1}{32} \cdot (4\sqrt{5})^{\sqrt{12}} \cdot (0,5)^4 \cdot (0,025)^{\frac{1}{2}} &= \frac{1}{2^5} \cdot ((2^2\sqrt{5})^{\sqrt{12}}) \cdot \left(\frac{1}{2}\right)^4 \cdot \left(\frac{1}{2^3 \cdot 5}\right)^{\frac{1}{2}} = \\ &= 2^{-5} \cdot (2^2\sqrt{5})^{\sqrt{12}} \cdot 2^{-4} \cdot (2^{-3} \cdot 5^{-1})^{\frac{1}{2}} = \\ &= 2^{-5} \cdot 2 \cdot \sqrt{5} \cdot 2^{-4} \cdot 2^{-\frac{3}{2}} \cdot 5^{-\frac{1}{2}} = \\ &= 2^{-5} \cdot 2^{12} \cdot 2^{-4} \cdot 2^{-\frac{3}{2}} \cdot 5^{-\frac{1}{2}} = \\ &= 2^{-5+12-4-\frac{3}{2}} \cdot 5^{-\frac{1}{2}} = 2^{3-\frac{3}{2}} \cdot 5^{-\frac{1}{2}} = 2^{\frac{3}{2}} \cdot 5^{-\frac{1}{2}} = \\ &= \sqrt{2^3} \cdot \frac{1}{\sqrt{5}} = \sqrt{\frac{2^3}{5}} = \sqrt{\frac{8}{5}} \end{aligned}$$

$$\begin{array}{r} 32 \quad 2 \\ 16 \quad 2 \\ 8 \quad 2 \\ 4 \quad 2 \\ 2 \quad 2 \\ 1 \end{array}$$

$$0,5 = \frac{5}{10} = \frac{1}{2}$$

$$\begin{aligned} 0,025 &= \frac{25}{1000} = \\ &= \frac{1}{40} = \frac{1}{8 \cdot 5} = \\ &= \frac{1}{2^3 \cdot 5} \end{aligned}$$