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Exercício de aula

① Simplificar

ⓐ $\sqrt[12]{5^6} = 5^{\frac{6}{12}} = 5^{\frac{1}{2}} = \sqrt{5}$

ⓑ $\sqrt[15]{32} = \sqrt[15]{2^5} = \sqrt[3]{2}$

ⓒ $\sqrt[10]{25a^6} = \sqrt[10]{5^2 \cdot a^6} = \sqrt[5]{5a^3}$

ⓓ $\sqrt[3]{16} = \sqrt[3]{2^3 \cdot 2^1} = \sqrt[3]{2^3} \cdot \sqrt[3]{2} = 2\sqrt[3]{2}$

② Transformar em um único numero radical

Ⓑⓑ $\sqrt{2} \cdot \sqrt[4]{6} \cdot \sqrt[4]{3} =$

$\sqrt[4]{2^6} \cdot \sqrt[4]{6^2} = \sqrt[4]{3^2}$

ⓐ $\sqrt{2} \cdot \sqrt{8} = \sqrt{16} = 4$

ⓒ $\dfrac{\sqrt{2}}{\sqrt[3]{5}} = \dfrac{\sqrt{2}}{\sqrt[3]{5}} = \dfrac{\sqrt[6]{2^3}}{\sqrt[6]{5}}$

$\dfrac{\sqrt[6]{2^3}}{\sqrt[6]{5}} \cdot \dfrac{\sqrt[6]{5}}{\sqrt[6]{5}}$

$\sqrt[6]{2^3 \cdot 5} = \sqrt[6]{8 \cdot 5}$

③ Escrever cada potência na forma de radical

ⓐ $2^{\frac{2}{3}} = \sqrt[3]{2^2}$

ⓑ $3^{\frac{1}{5}} = \sqrt[5]{3}$

ⓒ $5^{\frac{1}{2}} = \sqrt{5}$

ⓓ $2^{\frac{2}{3}} = \sqrt[3]{2^2} = \sqrt[3]{4}$

④ O valor da expressão $\left(4^{\frac{3}{2}} - \dfrac{2}{8^{\frac{2}{3}}}\right)^{\frac{1}{c}}$

$\left(4^{\frac{3}{2}} - 8^{\frac{2}{3}}\right)^{\frac{1}{a}} = $ ou $\left(4^{\frac{3}{2}} - 8^{\frac{2}{3}}\right)$

$\left(\sqrt{4^3} - \sqrt[3]{8^2}\right)^{\frac{1}{c}}$ $\left((2^2) - (2^3)\right)^{\frac{1}{2}}$

$\left(\sqrt{64} - \sqrt[3]{64}\right)$ $\left(2^3 - 2^2\right)$

$(8 - 4)^{\frac{1}{2}} = 2$ $(8-4)$

              $4^{\frac{1}{2}} = \left(2^2\right)^{\frac{1}{2}} = 2$

Ⓡ Ⓑ 2

⑤ Racionalize os denominadores.

ⓐ $\dfrac{1}{\sqrt{3}} = \dfrac{1}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3^1}} = \dfrac{\sqrt{3}}{\sqrt{3^2}} = \dfrac{\sqrt{3}}{3}$

ⓑ $\dfrac{10}{\sqrt[4]{5}} = \dfrac{10}{\sqrt[4]{5^1}} \cdot \dfrac{\sqrt[4]{5^3}}{\sqrt[4]{5^3}} = \dfrac{10\sqrt[4]{5^3}}{\sqrt[4]{5^4}} = \dfrac{10\sqrt[4]{5^3}}{5} = $

$2\sqrt[4]{5^3} = 2\sqrt[4]{125}$

ⓒ $\dfrac{1}{\sqrt[7]{2^3}} = \dfrac{1}{\sqrt[7]{2^3}} \cdot \dfrac{\sqrt[7]{2^4}}{\sqrt[7]{2^4}} = \dfrac{\sqrt[7]{2^4}}{\sqrt[7]{2^7}} = \dfrac{\sqrt[7]{16}}{2}$

1) $\dfrac{1}{\sqrt{3}+\sqrt{2}} \cdot \dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}} = \dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-2} = \dfrac{\sqrt{3}-\sqrt{2}}{1} = \sqrt{3}-\sqrt{2}$

(d) Tarefa Básica

01. (UEL) calculando-se $\left(-\dfrac{1}{243}\right)^{\frac{2}{5}}$, obtem-se

$\left(\dfrac{-1}{243}\right) = \sqrt[5]{\left(\dfrac{1}{-243}\right)^{-2}} = \sqrt[5]{\left[(-3)^{5}\right]^{2}} =$

$\sqrt[5]{(-3)^{10:5}} = (-3)^{2} = -9$

$R = -9$

2) (UEL) a expressão $4^{0.5}(2^{0.5})^{2}$

$4^{0.5(2^{0.5})} = 4^{0.5} = 4^{0.25} = 4^{\frac{1}{4}} = \sqrt[4]{4} = \sqrt[4]{2^{2}}$

$= \sqrt{2}$

03 (MACK) Supondo $\sqrt[4]{8}=1,68$ o valor máximo de $\sqrt{\dfrac{0,09}{\sqrt{2}}}$ é

$\sqrt[4]{8} = 1,68 \qquad \sqrt[4]{2^{3}} = 1,68$

$\sqrt{\dfrac{0,09}{\sqrt{2}}} = \dfrac{\sqrt{0,09}}{\sqrt{\sqrt{2}}} = \dfrac{\sqrt{0,09}}{\sqrt[4]{2}} = \dfrac{0,3}{\sqrt[4]{2}} \cdot \dfrac{\sqrt[4]{2^{3}}}{\sqrt[4]{2^{3}}}$

$\dfrac{0,3 \cdot 1,68}{\sqrt[4]{2^{4}}} = \dfrac{0,3 \cdot 1,68}{2} = 0,3 \cdot 0,84 = 0,252$

$R = B \quad 0,252$

04 (FUVEST) O valor do expressão $\dfrac{2-\sqrt{2}}{\sqrt{2}-1}$ é

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

$$\sqrt{2} \qquad R = \sqrt{2}$$

05 (UEL) Racionalizando-se $\dfrac{10}{\sqrt{18}+2\sqrt{2}}$ Obtém-se

$$\dfrac{10}{\sqrt{18}+2\sqrt{2}} = \dfrac{10}{5\sqrt{2}} = \dfrac{2 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \dfrac{2\sqrt{2}}{2} = \sqrt{2}$$

06 ① $\sqrt[3]{-27} = -3$

$$\begin{array}{r|l} 27 & 3 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array}$$

② $5^{-1/2} = \sqrt{5}$

03 $\dfrac{1}{\sqrt{3}} = \dfrac{\sqrt{3}}{3} = \dfrac{3}{\sqrt{3}}$

04 $\sqrt[3]{2^3} = 2^{3/5} = \sqrt{2}$

$$R = 1\ e\ 3 \qquad L = c$$

07) a soma $\sqrt{\dfrac{3}{4}} + \sqrt{\dfrac{4}{3}}$ é igual a:

$$\sqrt{\dfrac{3}{4}} + \sqrt{\dfrac{4}{3}}$$

$$\dfrac{\sqrt{3}}{2} + \dfrac{2}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}}$$

$$\dfrac{\sqrt{3}}{2} + \dfrac{2\sqrt{3}}{3}$$

$$\dfrac{3\sqrt{3} + 4\sqrt{3}}{6}$$

$$\dfrac{7\sqrt{3}}{6}$$

$$R = E$$