

RADICACIÓN

Problema 41:

Hallar el valor numérico de la siguiente expresión; para

$$a = \sqrt[43]{5^{30}} \text{ y}$$

$$b = \sqrt[28]{10^{30}} :$$

$$\sqrt{\left(\frac{a^{-\frac{1}{3}} b^{0,5}}{a^{\frac{1}{4}} b^{0,2}}\right)^{-2}} : \left(\frac{a^{\frac{3}{5}} b^{-\frac{1}{2}}}{\sqrt[5]{a}}\right)^{\frac{-1}{3}}$$

Solución Problema 41:

$$\sqrt{\left(\frac{a^{-\frac{1}{3}} b^{0,5}}{a^{\frac{1}{4}} b^{0,2}}\right)^{-2}} : \left(\frac{a^{\frac{3}{5}} b^{-\frac{1}{2}}}{\sqrt[5]{a}}\right)^{\frac{-1}{3}}$$

$$\begin{aligned} & \sqrt{\left(a^{-\frac{1}{3}} a^{\frac{-1}{4}} b^{-0,2} b^{0,5}\right)^{-2}} : \left(\frac{a^{\frac{3}{5}} b^{-\frac{1}{2}}}{a^{\frac{1}{5}}}\right)^{\frac{-1}{3}} \\ & = \sqrt{\left(a^{-\frac{1}{3}} a^{\frac{-1}{4}} b^{-0,2} b^{0,5}\right)^{-2}} : \left(a^{\frac{3}{5}} a^{\frac{-1}{5}} b^{-\frac{1}{2}}\right)^{\frac{-1}{3}} \end{aligned}$$

$$\sqrt{\left(a^{\frac{-7}{12}} b^{0,3}\right)^{-2}} : \left(a^{\frac{2}{5}} b^{-\frac{1}{2}}\right)^{\frac{-1}{3}} = \sqrt{\frac{1}{\left(a^{\frac{-7}{12}} b^{0,3}\right)^2}} : \frac{1}{\left(a^{\frac{2}{5}} b^{-\frac{1}{2}}\right)^{\frac{1}{3}}}$$

$$\frac{1}{a^{\frac{-7}{12}} b^{0,3}} : \frac{1}{\left(a^{\frac{2}{5}} b^{-\frac{1}{2}}\right)^{\frac{1}{3}}} = \frac{\left(a^{\frac{2}{5}} b^{-\frac{1}{2}}\right)^{\frac{1}{3}}}{a^{\frac{-7}{12}} b^{0,3}} = \frac{a^{\frac{2}{15}} b^{-\frac{1}{6}}}{a^{\frac{-7}{12}} b^{\frac{3}{10}}} = a^{\frac{2}{15}} b^{-\frac{1}{6}} a^{\frac{7}{12}} b^{\frac{-3}{10}}$$

$$a^{\frac{2}{15}} x a^{\frac{7}{12}} x b^{\frac{-1}{6}} x b^{\frac{-3}{10}} = a^{\frac{8+35}{60}} x b^{\frac{-5-9}{30}} = a^{\frac{43}{60}} x b^{\frac{-14}{30}}$$

Sustituimos el valor de a y b:

$$a = \sqrt[43]{5^{30}} \text{ y}$$

$$b = \sqrt[28]{10^{30}}$$

$$\left(\sqrt[43]{5^{30}}\right)^{\frac{43}{60}} x \left(\sqrt[28]{10^{30}}\right)^{\frac{-14}{30}} = 5^{\frac{1}{2}} x 10^{\frac{-1}{2}} = \sqrt{5} \frac{1}{\sqrt{10}} = \sqrt{\frac{5}{10}} =$$

$$\sqrt{\frac{5}{2x5}} = \sqrt{\frac{1}{2}}$$