

RADICACIÓN

Problema 25:

Resolver:

A) $16^{-3/4}$

B) $8^{2/3}$

C) $\left(\frac{81}{16}\right)^{-3/4}$

D) $\left(\frac{32}{243}\right)^{7/5}$

Solución Problema 25:

$$\begin{aligned} A) 16^{-3/4} &= \frac{1}{16^{3/4}} = \frac{1}{\sqrt[4]{16^3}} = \frac{1}{\sqrt[4]{(2^4)^3}} = \frac{1}{\sqrt[4]{2^{12}}} = \frac{1}{2^{12/4}} = \frac{1}{2^3} \\ &= \frac{1}{8} \end{aligned}$$

$$B) 8^{2/3} = \sqrt[3]{8^2} = \sqrt[3]{(2^3)^2} = \sqrt[3]{2^6} = 2^{6/3} = 2^2 = 4$$

$$C) \left(\frac{81}{16}\right)^{-3/4} = \frac{1}{\left(\frac{81}{16}\right)^{3/4}} = \frac{1}{\sqrt[4]{\left(\frac{81}{16}\right)^3}} = \frac{1}{\sqrt[4]{\left(\frac{9^2}{4^2}\right)^3}} =$$

$$\frac{1}{\sqrt[4]{\frac{9^4 9^2}{4^4 4^2}}} = \frac{4}{9} \frac{1}{\sqrt[4]{\frac{9^2}{4^2}}} = \frac{4}{9} \frac{1}{\sqrt[4]{\frac{(3^2)^2}{(2^2)^2}}} = \frac{4}{9} \frac{1}{\sqrt[4]{\frac{3^4}{2^4}}} = \frac{4}{9} \frac{1}{\frac{3}{2}} = \frac{4 \cdot 2}{9 \cdot 3} = \frac{8}{27}$$

$$D) \left(\frac{32}{243}\right)^{7/5} = \sqrt[5]{\left(\frac{32}{243}\right)^7} = \sqrt[5]{\left(\frac{2^5}{3^5}\right)^7} = \sqrt[5]{\frac{2^{35}}{3^{35}}} = \frac{2^7}{3^7} = \frac{\mathbf{128}}{\mathbf{2187}}$$