

$$\textcircled{a} \quad 9^{\frac{7}{2}} \quad \sqrt[2]{9^7}$$

$$\textcircled{e} \quad 8^{\frac{5}{2}} \quad \sqrt[2]{8^5}$$

$$\textcircled{i} \quad 10^{\frac{4}{5}} \quad \sqrt[5]{10^4}$$

$$\textcircled{b} \quad 14^{\frac{8}{3}} \quad \sqrt[3]{14^8}$$

$$\textcircled{f} \quad 21^{\frac{6}{5}} \quad \sqrt[5]{21^6}$$

$$\textcircled{j} \quad 11^{\frac{1}{2}} \quad \sqrt[2]{11^1}$$

$$\textcircled{c} \quad 13^{\frac{17}{3}} \quad \sqrt[3]{13^{17}}$$

$$\textcircled{g} \quad 6^{\frac{1}{4}} \quad \sqrt[4]{6^1}$$

$$\textcircled{k} \quad 100^{\frac{1}{2}} \quad \sqrt[2]{100^1}$$

$$\textcircled{d} \quad 2^{\frac{7}{10}} \quad \sqrt[10]{2^7}$$

$$\textcircled{h} \quad 6^{\frac{1}{2}} \quad \sqrt[2]{6^1}$$

$$\textcircled{l} \quad 10^{\frac{1}{4}} \quad \sqrt[4]{10^1}$$

2 Expresar las siguientes potencias en raíz o viceversa:

a. $9^{\frac{5}{2}}$ $\sqrt[2]{9^5}$

b. $10^{\frac{2}{5}}$ $\sqrt[5]{10^2}$

c. $8^{\frac{6}{7}}$ $\sqrt[7]{8^6}$

d. $\sqrt[3]{6}$ $6^{\frac{1}{3}}$

e. $\sqrt[4]{\left(\frac{11}{2}\right)^7}$ $\left(\frac{11}{2}\right)^{\frac{7}{4}}$

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$$\textcircled{3} \text{ A. } \frac{161y^3 \cancel{x^2}y}{23y^6 \cancel{x^2}} = \frac{\cancel{161}y^3 y}{\cancel{23}y^6} = \frac{7y^3 y}{y^6} = \frac{7y}{y^{6-3}} =$$

$$= \frac{\cancel{7}y}{y^3} = \frac{7}{y^2}$$

$$\text{B. } \frac{11x^{-2}y^{-10} \cancel{x^{12}}}{\cancel{2x^3} 4x^5} = \frac{11x^{-2}y^{-10} x^{12-3}}{2 \cdot 4x^5} = \frac{\cancel{11x^{-2}}y^{-10} x^9}{2 \cdot 4x^5} =$$

$$\frac{11y^{-10} \cancel{x^9}}{2 \cdot 4x^5} = \frac{11y^{-10} x^{9-5}}{2 \cdot 4} = \frac{11y^{-10} x^4}{2 \cdot 4}$$

como hay un exponente negativo se cambia a positivo al denominador

$$\frac{11x^2}{2 \cdot 4y^{10}} = \frac{11x^2}{8y^{10}}$$

$$\text{C. } \frac{14x^4 y^8 x^{32} z}{\cancel{7x^{-10}} x^{-9} y} = \frac{\cancel{2x^4} y^8 x^{32} z}{\cancel{x^{-10}} x^{-9} y} = \frac{2x^{14} \cancel{y^8} x^{32} z}{x^{-9} y} =$$

$$\frac{2x^{14}y^7x^{32}z}{x^9} = 2x^{14}y^7x^{32+9}z = 2x^{44}y^7x^{41}z =$$

$$2x^{14+41}y^7z = 2x^{55}y^7z$$

$$\textcircled{4} \text{ A. } \sqrt[5]{5} \cdot \sqrt[5]{6} \cdot \sqrt[5]{10} \cdot \sqrt[5]{8}$$

$$\sqrt[5]{5 \times 6 \times 10 \times 8} = \sqrt[5]{2400} = \sqrt[5]{2^5 \times 75} =$$

$$= \sqrt[5]{2^5} \sqrt[5]{75} = 2\sqrt[5]{75}$$

$$\text{B. } \sqrt[7]{2} \cdot \sqrt[7]{5} \cdot \sqrt[7]{6} = \sqrt[7]{60}$$

$$\text{C. } \sqrt[4]{16} \cdot \sqrt[4]{9} \cdot \sqrt[4]{11} = \sqrt[4]{2^4} = 2 = 2\sqrt[4]{9} \cdot \sqrt[4]{11} =$$

$$= 2\sqrt[4]{9 \times 11} = 2\sqrt[4]{99}$$

$$\text{D. } \frac{\sqrt[2]{27}}{\sqrt[2]{3}} = \sqrt[3]{3^3} = \frac{3}{\sqrt[3]{3}}$$

$$\frac{3}{\sqrt[3]{3}} \cdot \frac{\sqrt[3]{3^2}}{\sqrt[3]{3^2}} = \frac{3\sqrt[3]{3^2}}{\sqrt[3]{3 \times 3^2}} = \frac{3\sqrt[3]{3^2}}{\sqrt[3]{3^3}} = \frac{3\sqrt[3]{3^2}}{3}$$

$$= \sqrt[3]{3^2} = \sqrt[3]{9}$$

$$\text{E. } \frac{\sqrt[5]{160}}{\sqrt[5]{5}} = \frac{\sqrt[5]{5} \sqrt[5]{32}}{\sqrt[5]{5}} = \sqrt[5]{32} = \sqrt[5]{2^5} = 2$$

$$\text{F. } \frac{\sqrt[3]{24}}{\sqrt[3]{3}} = \frac{\sqrt[3]{3} \sqrt[3]{8}}{\sqrt[3]{3}} = \sqrt[3]{8} = \sqrt[3]{2^3} = 2$$

$$\text{G. } \sqrt[4]{9} \cdot \sqrt[4]{2} \cdot \sqrt[4]{15} \cdot \sqrt[4]{8} = \sqrt[4]{9 \times 2 \times 15 \times 8} = \sqrt[4]{2160} =$$

$$= \sqrt[4]{2^4 \times 135} = \sqrt[4]{2^4} \sqrt[4]{135} = 2\sqrt[4]{135}$$

$$\text{H. } \frac{\sqrt[3]{12}}{3} \cdot \frac{\sqrt[3]{5}}{2} \cdot \sqrt[3]{15} \cdot \frac{\sqrt[3]{8}}{7} = \sqrt[3]{\frac{12}{3} \times \frac{5}{2} \times \frac{8}{7} \times 15}$$

$$= \sqrt[3]{4 \times \frac{5}{2} \times 15 \times \frac{8}{7}} = \sqrt[3]{4 \times 5 \times 15 \times \frac{4}{7}} =$$

$$= \frac{4}{1} \times \frac{5}{1} \times \frac{15}{1} \times \frac{4}{7} = \frac{1200}{7} = \frac{\sqrt[3]{1200}}{\sqrt[3]{7}} = \sqrt[3]{2^3 \times 3 \times 5^2}$$

$$= \sqrt[3]{2^3} \sqrt[3]{150} = \frac{2\sqrt[3]{150}}{\sqrt[3]{7}} \times \frac{\sqrt[3]{7^2}}{\sqrt[3]{7^2}} = \frac{2\sqrt[3]{150 \times 7^2}}{\sqrt[3]{7 \times 7^2}}$$

$$= \frac{2\sqrt[3]{150 \times 7^2}}{\sqrt[3]{7^3}} = \frac{2\sqrt[3]{150 \times 7^2}}{7} = \frac{2\sqrt[3]{150 \times 49}}{7} =$$

$$= \frac{2\sqrt[3]{7350}}{7}$$

$$I. \sqrt[6]{19} \cdot \sqrt[6]{5} \cdot \sqrt[6]{11} \cdot \sqrt[6]{2} = \sqrt[6]{19 \times 5 \times 11 \times 2} = \sqrt[6]{2090}$$

$$J. \sqrt[10]{\frac{3}{2}} \sqrt[10]{\frac{4}{5}} \sqrt[10]{\frac{1}{3}} \sqrt[10]{\frac{6}{7}} = \sqrt[10]{\frac{3 \cdot 4 \cdot 1 \cdot 6}{2 \cdot 5 \cdot 3 \cdot 7}}$$

$$= \sqrt[10]{\frac{1 \cdot \cancel{4} \cdot 6}{2 \cdot 5 \cdot 7}} = \sqrt[10]{\frac{2 \cdot 6}{5 \cdot 7}} = \frac{2}{5} \times \frac{6}{7} = \frac{12}{35} =$$

$$= \sqrt[10]{\frac{12}{35}} = \frac{\sqrt[10]{12}}{\sqrt[10]{35}} = \frac{\sqrt[10]{12 \times 35^9}}{35}$$

$$K. \frac{\sqrt[4]{9}}{\sqrt[4]{2}} \times \frac{\sqrt[4]{15}}{\sqrt[4]{8}} = \frac{\sqrt[4]{9 \times 15}}{\sqrt[4]{2 \times 8}} = \frac{\sqrt[4]{135}}{\sqrt[4]{16}}$$

$$= \sqrt[4]{2^4} = 2 = \frac{\sqrt[4]{135}}{2}$$

$$L. \frac{\sqrt[4]{9}}{\sqrt[4]{3}} = \frac{\sqrt[4]{3} \sqrt[4]{3}}{\sqrt[4]{3}} = \sqrt[4]{3}$$

$$M. \frac{\sqrt[5]{10}}{\sqrt[5]{15}} \frac{\sqrt[5]{15}}{\sqrt[5]{8}} = \sqrt[5]{10} \times \frac{1}{\sqrt[5]{4}} = \frac{\sqrt[5]{5 \times 1}}{\sqrt[5]{4}} =$$

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

$$= \frac{\sqrt[5]{5 \times 2^3}}{\sqrt[5]{2^4 \times 2^3}} = \frac{\sqrt[5]{5 \times 2^3}}{\sqrt[5]{2^7}} = \frac{\sqrt[5]{5 \times 2^3}}{2}$$

$$= \frac{\sqrt[5]{40}}{2}$$

$$N. \frac{\sqrt[4]{18}}{\sqrt[4]{16}} \times \sqrt[4]{5} \times \sqrt[4]{18} = \sqrt[4]{3} \sqrt[4]{5} \sqrt[4]{18} = \sqrt[4]{3 \times 5 \times 18}$$

$$= \sqrt[4]{270}$$