

Ejercicios página 46, "piensa y practica"

$$\boxed{1} \quad a) \sqrt[12]{x^9} = \sqrt[4]{x^3}$$

$$b) \sqrt[12]{x^8} = \sqrt[3]{x^2}$$

$$c) \sqrt[5]{y^{10}} = \sqrt[1]{y^2} = y^2$$

$$d) \sqrt[6]{8} = \sqrt[6]{2^3} = \sqrt{2}$$

$$e) \sqrt[9]{64} = \sqrt[9]{2^6} = \sqrt[3]{2^2} = \sqrt[3]{4}$$

$$f) \sqrt[8]{3^4} = \sqrt{3}$$

$$\boxed{2} \quad a) \frac{\sqrt{9}}{\sqrt[3]{3}} = \frac{\sqrt[2 \cdot 3]{(3^2)^3}}{\sqrt[3 \cdot 2]{3^2}} = \frac{\sqrt[6]{3^6}}{\sqrt[6]{3^2}} = \sqrt[6]{\frac{3^6}{3^2}} = \sqrt[6]{3^4} = \sqrt[3]{3^2} = \sqrt{9}$$

$$b) \frac{\sqrt[5]{16}}{\sqrt{2}} = \frac{\sqrt[5 \cdot 2]{2^{4 \cdot 2}}}{\sqrt[2 \cdot 5]{2^{1 \cdot 5}}} = \frac{\sqrt[10]{2^8}}{\sqrt[10]{2^5}} = \sqrt[10]{\frac{2^8}{2^5}} = \sqrt[10]{2^{(8-5)}} = \sqrt[10]{2^3}$$

$$c) \frac{\sqrt[4]{a^3 b^5 c}}{\sqrt{a b^3 c^3}} = \sqrt[4]{\frac{a^3 b^5 c}{a^2 b^6 c^6}} = \sqrt[4]{\frac{a}{b \cdot c^5}} = \frac{1}{c} \sqrt[4]{\frac{a}{b \cdot c}}$$

$$d) (\sqrt[3]{a^2})^6 = \sqrt[3]{a^{12}} = a^4$$

$$e) (\sqrt{x})^3 \cdot (\sqrt[3]{x}) = (\sqrt[2 \cdot 3]{x^{3 \cdot 3}}) \cdot (\sqrt[3 \cdot 2]{x^{1 \cdot 2}}) = \sqrt[6]{x^9} \cdot \sqrt[6]{x^2} = \sqrt[6]{x^9 \cdot x^2} = \sqrt[6]{x^{11}} = x \sqrt[6]{x^5}$$

$$f) (\sqrt{\sqrt{\sqrt{2}}})^8 = (\sqrt[2 \cdot 2 \cdot 2]{2})^8 = \sqrt[8]{2^8} = 2$$

$$\boxed{3} \quad a) \sqrt[3]{2} \cdot \sqrt[5]{2} = \sqrt[3 \cdot 5]{2^5} \cdot \sqrt[5 \cdot 3]{2^3} = \sqrt[15]{2^5 2^3} = \sqrt[15]{2^8}$$

$$b) \sqrt[3]{6} \cdot \sqrt[6]{3} = \sqrt[3 \cdot 2]{6^2} \cdot \sqrt[6]{3} = \sqrt[6]{6^2 \cdot 3} = \sqrt[6]{108}$$

$$c) \sqrt[10]{a^4 \cdot b^6} = \sqrt[10]{(a^2 \cdot b^3)^2} = \sqrt[5]{a^2 \cdot b^3}$$

$$\boxed{4} \quad a) \sqrt[3]{32x^4} = \sqrt[3]{2^5x^4} = 2x\sqrt[3]{2^2x} = 2x\sqrt[3]{4x}$$

$$b) \sqrt[3]{81a^3b^5c} = \sqrt[3]{3^4a^3b^5c} = 3a\sqrt[3]{3b^2c}$$

$$c) \sqrt[3]{64} = \sqrt[3]{4^3} = 4$$

$$\boxed{5} \quad a) \sqrt{18} + \sqrt{50} - \sqrt{2} - \sqrt{8} =$$

$$= \sqrt{3^2 \cdot 2} + \sqrt{5^2 \cdot 2} - \sqrt{2} - \sqrt{2^3} = 3\sqrt{2} + 5\sqrt{2} - \sqrt{2} - 2\sqrt{2} =$$

$$= 5\sqrt{2}$$

$$b) \sqrt{20} + \sqrt{45} - \sqrt{80} = \sqrt{2^2 \cdot 5} + \sqrt{3^2 \cdot 5} - \sqrt{2^4 \cdot 5} =$$

$$= 2\sqrt{5} + 3\sqrt{5} - 2^2\sqrt{5} = \sqrt{5}$$