

Simplifying nth Roots #3

Simplify completely

1) $\sqrt[4]{32x^9y^4}$

$$\sqrt[4]{16} \sqrt[4]{2} \sqrt[4]{x^8} \sqrt[4]{x} \sqrt[4]{y^4}$$

2
 x^2
 y

$$\boxed{2x^2y\sqrt[4]{2x}}$$

2) $\sqrt[5]{-32x^5y^{12}}$

$$\sqrt[5]{-32} \sqrt[5]{x^5} \sqrt[5]{y^{10}} \sqrt[5]{y^2}$$

-2
 x
 y^2

$$\boxed{-2xy^2\sqrt[5]{y^2}}$$

3) $2\sqrt[3]{128} - 3\sqrt[3]{16}$

$$2\sqrt[3]{64}\sqrt[3]{2} - 3\sqrt[3]{8}\sqrt[3]{2}$$

$$2 \cdot 4\sqrt[3]{2} - 3 \cdot 2\sqrt[3]{2}$$

$$8\sqrt[3]{2} - 6\sqrt[3]{2}$$

$$\boxed{2\sqrt[3]{2}}$$

4) $\sqrt[3]{24x^3y^3} + 5x\sqrt[3]{3x^3}$

$$\sqrt[3]{8}\sqrt[3]{3}\sqrt[3]{x^3}\sqrt[3]{y^3} + 5x\sqrt[3]{3}\sqrt[3]{x^3}$$

2
 x
 y
 x

$$2xy\sqrt[3]{3} + 5xy\sqrt[3]{3}$$

$$\boxed{7xy\sqrt[3]{3}}$$

5) $\sqrt[3]{\frac{27}{8}}$

$$\frac{\sqrt[3]{27}}{\sqrt[3]{8}} = \boxed{\frac{3}{2}}$$

6) $\sqrt[3]{x^4} \cdot \sqrt[3]{x^5}$

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

$$\boxed{= x^3}$$