

Simplifying nth Roots #2

Simplify completely

1) $\sqrt[3]{168}$

$$\begin{array}{c} \wedge \\ \sqrt[3]{8} \sqrt[3]{21} \\ \boxed{2 \sqrt[3]{21}} \end{array}$$

2) $\sqrt[3]{72}$

$$\begin{array}{c} \wedge \\ \sqrt[3]{8} \sqrt[3]{9} \\ \boxed{2 \sqrt[3]{9}} \end{array}$$

3) $\sqrt[4]{3750}$

$$\begin{array}{c} \wedge \\ \sqrt[4]{625} \sqrt[4]{6} \\ \boxed{5 \sqrt[4]{6}} \end{array}$$

4) $\sqrt[3]{0.08x^9y^4}$

$$\begin{array}{c} \wedge \\ \sqrt[3]{0.08} \sqrt[3]{x^9} \sqrt[3]{y^4} \\ \begin{array}{c} x^3 \\ \sqrt[3]{y^3} \sqrt[3]{y} \\ y \end{array} \end{array} \rightarrow \boxed{x^3 y \sqrt[3]{0.08 y}}$$

5) $\sqrt[3]{64x^7}$

$$\begin{array}{c} \sqrt[3]{64} \sqrt[3]{x^7} \\ 4 \sqrt[3]{x^6} \sqrt[3]{x} \\ x^2 \\ \boxed{4x^2 \sqrt[3]{x}} \end{array}$$

6) $\sqrt[3]{-16x^8}$

$$\begin{array}{c} \sqrt[3]{-16} \sqrt[3]{x^8} \\ \sqrt[3]{-8} \sqrt[3]{2} \sqrt[3]{x^6} \sqrt[3]{x^2} \\ -2 \quad x^2 \end{array} \rightarrow \boxed{-2x^2 \sqrt[3]{2x^2}}$$

7) $\sqrt[7]{512x^9}$

$$\begin{array}{c} \wedge \\ \sqrt[7]{128} \sqrt[7]{4} \sqrt[7]{x^7} \sqrt[7]{x^2} \\ 2 \sqrt[7]{4} \quad x \sqrt[7]{x^2} \\ \boxed{2x \sqrt[7]{4x^2}} \end{array}$$

8) $\sqrt[7]{-512x^8y^9}$

$$\begin{array}{c} \sqrt[7]{-512} \sqrt[7]{x^8} \sqrt[7]{y^9} \\ \sqrt[7]{-128} \sqrt[7]{4} \sqrt[7]{x^7} \sqrt[7]{x} \sqrt[7]{y^7} \sqrt[7]{y^2} \\ -2 \quad x \quad y \end{array}$$

$1^7 = 1$
 $2^7 = 128$
 $3^7 = 2187$

↑
 THESE ARE THE FACTORS WE ARE LOOKING FOR.

$$\boxed{-2xy \sqrt[7]{4xy^2}}$$