

# Simplifying Radicals Whoohoo!

Simplify

Split up the Radical



Simplify Each piece Separately

$$\begin{aligned} \textcircled{1} \quad & \sqrt{36m^3} \\ & \sqrt{36} \sqrt{m^3} \\ & 6 \sqrt{m^2 m} \\ & \boxed{6m\sqrt{m}} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & \sqrt{448x^6y^3} \\ & \sqrt{448} \sqrt{x^6} \sqrt{y^3} \\ & \sqrt{4 \cdot 112} \quad x^3 \sqrt{y^2} \sqrt{y} \\ & \sqrt{4} \sqrt{112} \quad x^3 y \sqrt{y} \\ & 2\sqrt{112} \quad \underbrace{\hspace{2cm}} \\ & 2\sqrt{4 \cdot 28} \\ & 2\sqrt{4} \sqrt{28} \\ & 2 \cdot 2 \sqrt{28} \\ & 4\sqrt{4 \cdot 7} \\ & 4\sqrt{4} \sqrt{7} \\ & 4 \cdot 2 \sqrt{7} \\ & 8\sqrt{7} \quad x^3 y \sqrt{y} \\ & \boxed{8x^3 y \sqrt{y}} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 4m \sqrt{20m^2} \\ & 4m \sqrt{20} \sqrt{m^2} \\ & 4m \sqrt{4 \cdot 5} m \\ & 4m \cdot m \sqrt{4} \sqrt{5} \\ & 4m^2 \cdot 2 \sqrt{5} \\ & \boxed{8m^2 \sqrt{5}} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 3a^3 \sqrt{28a^3b^5} \\ & 3a^3 \sqrt{4 \cdot 7} \sqrt{a^3} \sqrt{b^5} \\ & 3a^3 \sqrt{4} \sqrt{7} \sqrt{a^2} \sqrt{a} \sqrt{b^4} \sqrt{b} \\ & 3a^3 \cdot 2 \sqrt{7} a \sqrt{a} b^2 \sqrt{b} \\ & 6a^4 b^2 \sqrt{7} a \sqrt{b} \\ & \boxed{6a^4 b^2 \sqrt{7ab}} \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & -2\sqrt{1000} \\ & -2\sqrt{100 \cdot 10} \\ & -2\sqrt{100} \sqrt{10} \\ & -2 \cdot 10 \sqrt{10} \\ & \boxed{-20\sqrt{10}} \end{aligned}$$