

Simplifying Radicals

Multiplication Property of Square Roots

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

$$\sqrt{48} = \sqrt{16} \cdot \sqrt{3} = 4\sqrt{3}$$

Simplify each radical expression.

$$\begin{aligned} \textcircled{1} \sqrt{72} &= \sqrt{9 \cdot 4 \cdot 2} \\ &= 3 \cdot 2 \cdot \sqrt{2} \\ &= \boxed{6\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \sqrt{54y^9} &= \sqrt{9y^8} \cdot \sqrt{6y} \\ &= \boxed{3y^4\sqrt{6y}} \end{aligned}$$

$$\begin{aligned} \textcircled{3} 2\sqrt{7b} \cdot 3\sqrt{14b^2} &= 6\sqrt{98b^3} \\ &= 6 \cdot \sqrt{49b^2} \cdot \sqrt{2b} \\ &= 6 \cdot 7b \cdot \sqrt{2b} \\ &= \boxed{42b\sqrt{2b}} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \sqrt{\frac{8x^3}{50x}} &= \sqrt{\frac{4x^2}{25}} \\ &= \frac{\sqrt{4x^2}}{\sqrt{25}} = \boxed{\frac{2x}{5}} \end{aligned}$$

Division Property of Square Roots

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

$$\sqrt{\frac{36}{49}} = \frac{\sqrt{36}}{\sqrt{49}} = \frac{6}{7}$$

Rationalize the denominator.

$$\textcircled{5} \frac{\sqrt{3}}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \boxed{\frac{\sqrt{21}}{7}}$$