

9.1 simplify.

$$\textcircled{1} \sqrt{36} = 6$$

$$\sqrt{36} = \sqrt{6 \cdot 6} = 6$$

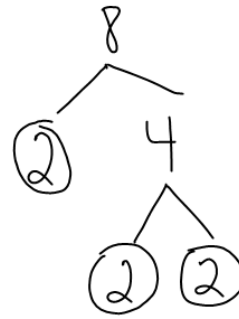
$$\textcircled{2} \sqrt{\frac{1}{16}} = \frac{\sqrt{1}}{\sqrt{16}} = \frac{1}{4}$$

$$\textcircled{3} -\sqrt{81} = -(9) = -9$$

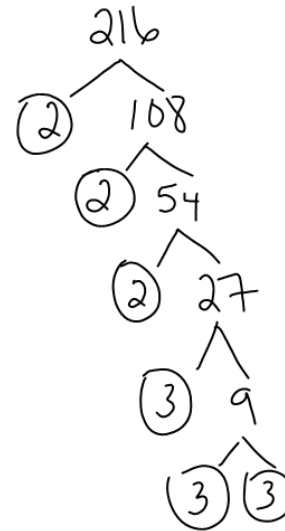
$$\begin{aligned} \textcircled{4} \sqrt{x^6} &= \sqrt{\boxed{x \cdot x} \cdot \boxed{x \cdot x} \cdot \boxed{x \cdot x}} \\ &= x \cdot x \cdot x \\ &= x^3 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \sqrt{49y^4} &= \sqrt{\boxed{7 \cdot 7} \cdot \boxed{y \cdot y} \cdot \boxed{y \cdot y}} \\ &= 7 \cdot y \cdot y \\ &= 7y^2 \end{aligned}$$

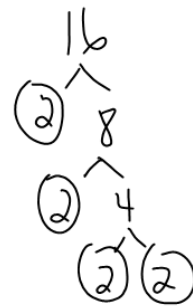
⑥ $\sqrt[3]{8}$
 $\sqrt[3]{2 \cdot 2 \cdot 2} = 2$



⑦ $\sqrt[3]{216}$
 $\sqrt[3]{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3}$
 $2 \cdot 3 = 6$



⑧ $\sqrt[4]{16}$
 $\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2}$
 2



$$\begin{aligned}
 \textcircled{9} \quad \sqrt[4]{x^{20}} &= \sqrt{\boxed{xxxx} \boxed{xxxx} \boxed{xxxx} \boxed{xxxx} \boxed{xxxx}} \\
 &= xxxxx \\
 &= x^5
 \end{aligned}$$

$$\sqrt{x+y} \neq \sqrt{x} + \sqrt{y}$$

$$\begin{aligned}
 \textcircled{10} \quad \sqrt{x^2 + 10x + 25} &= \sqrt{\boxed{(x+5)(x+5)}} \\
 &= x+5
 \end{aligned}$$

Simplify.

$$\begin{aligned}
 \textcircled{1} \quad 3\sqrt{6} \cdot 8\sqrt{6} &= 24\sqrt{36} \\
 &= 24(6) \\
 &= 144
 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad (4\sqrt{3})(-2\sqrt{27}) &= -8\sqrt{81} \\ &= -8(9) \\ &= -72 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad \sqrt{6x^5} \cdot \sqrt{150x^3} &= \sqrt{900x^8} \\ &= 30x^4 \end{aligned} \quad \begin{aligned} x^5 \cdot x^3 &= x^8 \\ (x^5)^3 &= x^{15} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad \frac{\sqrt{350}}{\sqrt{14}} &= \sqrt{\frac{350}{14}} \\ &= \sqrt{25} \\ &= 5 \end{aligned} \quad \begin{array}{c} 14 \\ \wedge \\ 7 \cdot 2 \end{array}$$

$$\begin{aligned} \textcircled{5} \quad \frac{\sqrt[3]{432x^7}}{\sqrt[3]{2x^4}} &= \sqrt[3]{\frac{432x^7}{2x^4}} \\ &= \sqrt[3]{216x^3} \end{aligned} \quad \frac{x^7}{x^4}$$

$$\begin{aligned} &= \sqrt[3]{\boxed{2 \cdot 2 \cdot 2} \cdot \boxed{3 \cdot 3 \cdot 3} x^3} \\ &= 2 \cdot 3 \cdot x \\ &= 6x \end{aligned}$$

$$\begin{array}{c} 216 \\ \wedge \\ \textcircled{2} \quad 108 \\ \wedge \\ \textcircled{2} \quad 54 \\ \wedge \\ \textcircled{2} \quad 27 \\ \wedge \\ \textcircled{3} \quad 9 \\ \wedge \\ \textcircled{3} \quad 3 \end{array}$$