

Algebra II - Radical Practice

Simplify.

$$1. \sqrt{81}$$



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**Simplify.**

2.  $\sqrt{18}$

$$\begin{array}{c} \sqrt{9 \cdot 2} \\ \sqrt{9} \sqrt{2} \\ \boxed{3\sqrt{2}} \end{array}$$

3.  $\sqrt{128}$

$$\begin{array}{c} \sqrt{64\sqrt{2}} \\ \boxed{8\sqrt{2}} \end{array}$$

4.  $\sqrt{50}$

$$\begin{array}{c} \sqrt{25\sqrt{2}} \\ \boxed{5\sqrt{2}} \end{array}$$

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**Simplify.**

11.  $\sqrt{14}$

$\boxed{\sqrt{14}}$

16.  $3\sqrt{100}$

$3 \cdot 10$   
 $\boxed{30}$

18.  $-2\sqrt{75}$

$$\begin{aligned} & -2 \sqrt{25} \sqrt{3} \\ & -2 \cdot 5 \sqrt{3} \\ & \boxed{-10\sqrt{3}} \end{aligned}$$

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Simplify.

$$6\sqrt{4}\sqrt{15}$$

$$\frac{6 \cdot 2\sqrt{15}}{12\sqrt{15}}$$

20.  $6\sqrt{60}$

$$\begin{array}{c} 6\sqrt{60} \\ \diagup \quad \diagdown \\ 2 \quad 3 \quad 2 \quad 5 \\ \hline 6 \cdot \boxed{2 \cdot 2 \cdot 3 \cdot 5} \\ \downarrow \\ 6 \cdot 2\sqrt{3 \cdot 5} \\ \boxed{12\sqrt{15}} \end{array}$$

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**Multiply**

25.  $(3\sqrt{12})(\sqrt{6})$

$$\underline{3\sqrt{12 \cdot 6}}$$

$$\begin{array}{r} 3\sqrt{72} \\ \swarrow \\ 3\sqrt{36\sqrt{2}} \\ 3 \cdot 6\sqrt{2} \\ \hline 18\sqrt{2} \end{array}$$

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**Multiply**

26.  $(\sqrt{6})(\sqrt{6})$

$$\begin{aligned} &\sqrt{6 \cdot 6} \\ &\sqrt{36} \\ &6 \\ &\cancel{\boxed{6}} \\ &\boxed{6} \end{aligned}$$

27.  $(-4\sqrt{15})(-\sqrt{3})$

$$\begin{aligned} &\cancel{4} \cancel{\sqrt{15 \cdot 3}} \\ &4 \sqrt{45} \\ &4 \sqrt{9 \cdot 5} \\ &4 \cdot 3\sqrt{5} \\ &\boxed{12\sqrt{5}} \end{aligned}$$

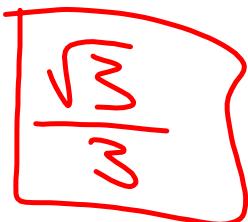
32.  $(\sqrt{5})(\sqrt{3})$

$$\frac{\sqrt{5 \cdot 3}}{\sqrt{15}}$$

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**Rationalize**

$$37. \frac{1}{\sqrt{3}} - \frac{\sqrt{3}}{\sqrt{3}}$$


$$\boxed{\frac{\sqrt{3}}{3}}$$

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**Rationalize**

38.  $\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\frac{\sqrt{2}}{2}$$

39.  $\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$

$$\frac{3\sqrt{5}}{5}$$

44.  $\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$$\frac{\sqrt{6}}{3}$$

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**Rationalize**

46.  $\frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\begin{array}{r} \cancel{2} \sqrt{2} \\ \hline 2 \cdot 2 \\ \boxed{\frac{\sqrt{2}}{4}} \end{array}$$

47.  $\frac{2\sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\begin{array}{r} \cancel{2} \sqrt{6} \\ \hline \cancel{2} = \sqrt{6} \end{array}$$

49.  $\sqrt{\frac{9}{4}}$

$$\begin{array}{r} \sqrt{9} \\ \hline \sqrt{4} \\ \boxed{\frac{3}{2}} \end{array}$$

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**Rationalize**

51.  $\sqrt[5]{\frac{81}{49}}$

$$\frac{5\sqrt{81}}{1\sqrt{49}}$$

$$\frac{5 \cdot 9}{7} = \boxed{\frac{45}{7}}$$

52.  $\sqrt[6]{\frac{72}{50}}$

$$\sqrt[6]{\frac{36}{25}}$$

$$\frac{6\sqrt{36}}{\sqrt{25}}$$

$$\frac{6 \cdot 6}{5} = \boxed{\frac{36}{5}}$$

53.  $\sqrt[15]{\frac{54}{6}}$

$$15\sqrt{9}$$

$$15 \cdot 3$$

$$\boxed{45}$$

## Algebra II - Radical Practice

**Rationalize**

54.  $\sqrt{\frac{1}{3}}$

$$\begin{aligned} \sqrt{3} \cdot \frac{\sqrt{3}}{\sqrt{3}} &= \frac{1}{\sqrt{3}} \\ &= \boxed{\sqrt{3}/3} \end{aligned}$$

58.  $\sqrt[3]{\frac{1}{2}}$

$$\begin{aligned} \frac{\sqrt[3]{2}}{\sqrt[3]{2}} &= \frac{\sqrt[3]{2}}{\sqrt[3]{2}} \\ \frac{\sqrt[3]{2}}{\sqrt[3]{2}} &= \boxed{\sqrt[3]{2/2}} \end{aligned}$$