

**Chapter 9**  
**Form F**

For problems 1 – 3, find the indicated root, or state that the expression is not a real number.

1.  $\sqrt{2500}$   
a. 1250                      b. 500                      c. 50                      d. Not a real number
2.  $\sqrt[3]{-8}$   
a. 4                      b. 2                      c. -2                      d. Not a real number
3.  $\sqrt{-16}$   
a. 16                      b. 4                      c. -4                      d. Not a real number

For problems 4 – 6, simplify by first writing the expression in radical form.

4.  $100^{\frac{1}{2}}$   
a.  $\sqrt{100} = 50$                       b.  $\frac{1}{\sqrt{100}} = \frac{1}{10}$                       c.  $\sqrt{100} = 10$                       d.  $\frac{1}{\sqrt{100}} = \frac{1}{50}$
5.  $(-64)^{\frac{2}{3}}$   
a.  $\frac{1}{(\sqrt{-64})^3} = -\frac{1}{512}$                       b.  $\frac{1}{(\sqrt[3]{-64})^2} = \frac{1}{16}$                       c.  $(\sqrt[3]{(-64)})^2 = 16$                       d. Not a real number
6.  $(25)^{\frac{3}{2}}$   
a.  $\frac{1}{(\sqrt{25})^3} = \frac{1}{125}$                       b.  $(\sqrt{-25})^3 = 125$                       c.  $(\sqrt{25})^3 = 125$                       d. Not a real number

For problems 7 – 9, simplify each expression.

7.  $5\sqrt{28}$   
a.  $10\sqrt{7}$                       b.  $20\sqrt{7}$                       c. 70                      d.  $10\sqrt{6}$
8.  $\sqrt{294x^9}$   
a.  $7x^4\sqrt{6x}$                       b.  $7x^3\sqrt{6}$                       c.  $147x^4\sqrt{x}$                       d.  $6x^4\sqrt{7x}$
9.  $\sqrt[3]{432x^8}$   
a.  $144x^2$                       b.  $6x^2\sqrt[3]{2}$                       c.  $6x^2\sqrt[3]{2x^2}$                       d.  $144x^2\sqrt[3]{x^2}$

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For problems 10 – 19, perform the indicated operation and , if possible, simplify.

10.  $\sqrt{80} \cdot \sqrt{15}$

a.  $\sqrt{95}$

b.  $10\sqrt{12}$

c.  $80\sqrt{3}$

d.  $20\sqrt{3}$

11.  $\sqrt[3]{27} \cdot \sqrt[3]{24}$

a. 72

b.  $3\sqrt[3]{24}$

c.  $6\sqrt[3]{6}$

d.  $6\sqrt[3]{3}$

12.  $\sqrt{\frac{8}{2}} \cdot \sqrt{\frac{16}{8}}$

a.  $\frac{32}{4}$

b.  $2\sqrt{2}$

c.  $\frac{8\sqrt{2}}{16}$

d.  $\frac{\sqrt{2}}{8}$

13.  $\frac{\sqrt{300x^4}}{\sqrt{5x}}$

a.  $4x\sqrt{15x}$

b.  $12x^2$

c.  $2x\sqrt{15x}$

d.  $10x^4\sqrt{5}$

14.  $\sqrt{25x^3} \cdot \sqrt{20x^5}$

a.  $10x^4\sqrt{5}$

b.  $10x^3\sqrt{5x}$

c.  $25x^4\sqrt{2}$

d.  $10x^4\sqrt{5x}$

15.  $\sqrt{7} + \sqrt{112} - \sqrt{28}$

a.  $\sqrt{91}$

b.  $3\sqrt{7}$

c.  $15\sqrt{7}$

d.  $12\sqrt{7}$

16.  $\sqrt{6}(3\sqrt{2} + 7\sqrt{6})$

a.  $12\sqrt{3} + 42$

b.  $6\sqrt{3} + 42$

c.  $40\sqrt{3}$

d.  $48\sqrt{3}$

17.  $(3\sqrt{5} - 4\sqrt{2})(2\sqrt{5} + 6\sqrt{2})$

a.  $54 + 10\sqrt{10}$

b.  $-18 + 10\sqrt{10}$

c.  $78 + 10\sqrt{10}$

d.  $-18 + 26\sqrt{10}$

18.  $(\sqrt{11} + \sqrt{5})(\sqrt{11} - \sqrt{5})$

a. 146

b. 96

c. 16

d. 6

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19.  $(\sqrt{2} - \sqrt{3})^2$

a.  $5 - 2\sqrt{6}$

b. 5

c.  $3\sqrt{6}$

d. -1

For problems 20 – 21, rationalize each denominator and, if possible, simplify.

20.  $\frac{\sqrt{6}}{\sqrt{5x}}$

a.  $\frac{\sqrt{30}}{5}$

b.  $\sqrt{6}$

c.  $\frac{\sqrt{30x}}{5x}$

d.  $\frac{\sqrt{6x}}{x}$

21.  $\frac{4}{\sqrt{7} + \sqrt{3}}$

a.  $\sqrt{7} - \sqrt{3}$

b.  $\frac{4\sqrt{7} + 4\sqrt{3}}{10}$

c.  $\frac{2\sqrt{7} + 2\sqrt{3}}{5}$

d.  $\frac{4\sqrt{7} - 4\sqrt{3}}{4}$

For problems 22 – 24, solve each radical equation. If the equation has no solution, so state.

22.  $\sqrt{x+1} - 4 = -2$

a. {5}

b. {3}

c. {19}

d. No solution

23.  $\sqrt{2x+6} = 2\sqrt{x}$

a. {3}

b. {1}

c. {0}

d. No solution

24.  $\sqrt{3-x} = x-3$

a. {2}

b. {2, 3}

c. {3}

d. No solution

25. The formula  $v = 2\sqrt{6L}$  is used by police to estimate the speed of a car ( $v$ , in miles per hour) based on the length of its skid mark ( $L$ , in feet) on dry pavement. How far will a car skid at a speed of 72 miles per hour?

a. 6 ft.

b. 36 ft.

c. 216 ft.

d. 864ft.