

Chapter 8
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.