

review 7-1 to 7-4

Short Answer

- Find all the real square roots of 0.0004. $\pm .02$
- Find all the real square roots of $-\frac{9}{16}$. none
- Find all the real cube roots of 0.000027. $.03$
- Find all the real fourth roots of $\frac{256}{2401}$. $\pm \frac{4}{7}$

Find the real-number root.

- $\sqrt{1.69}$ 1.3
- $\sqrt{-2.56}$ none
- $\sqrt[3]{\frac{125}{343}}$ $-\frac{5}{7}$

Simplify the radical expression. Use absolute value symbols if needed.

$$8. \sqrt{36g^6} \quad |6g^3|$$

Multiply and simplify if possible.

- $\sqrt{6} \cdot \sqrt{2}$ $\sqrt{12} = 2\sqrt{3}$
- $\sqrt[4]{3} \cdot \sqrt[4]{-3}$ $\sqrt[4]{-9}$ none
- $\sqrt{7x}(\sqrt{x} - 7\sqrt{7})$ $\sqrt{7x^2} - 7\sqrt{49x} = x\sqrt{7} - 49\sqrt{x}$
- Multiply and simplify $\sqrt[3]{7x^7} \cdot \sqrt[3]{6x^8}$. Assume that all variables are positive. $\sqrt[3]{42x^{15}} = x^5\sqrt[3]{42}$

Divide and simplify.

- $\frac{\sqrt[3]{162}}{\sqrt[3]{2}} = \sqrt[3]{81} = 3\sqrt[3]{3}$
- $\frac{\sqrt[4]{400}}{\sqrt[4]{5}} = \sqrt[4]{80} = 2\sqrt[4]{5}$
- $\frac{\sqrt{90x^{18}}}{\sqrt{2x}} = \sqrt{45x^{17}} = 3x^8\sqrt{5x}$

Rationalize the denominator of the expression. Assume that all variables are positive.

16. $\frac{\sqrt[3]{9}}{\sqrt[3]{11}} \cdot \frac{\sqrt[3]{11}}{\sqrt[3]{11}} = \frac{\sqrt[3]{1089}}{\sqrt[3]{11}}$

17. $\frac{\sqrt{6x^2y}}{\sqrt{5x^2y^4}} \cdot \frac{\sqrt{5x^2y^4}}{\sqrt{5x^2y^4}} = \frac{\sqrt{30x^2y^5}}{\sqrt{5x^2y^4}}$

18. $\frac{\sqrt{3-\sqrt{6}}}{\sqrt{3+\sqrt{6}}} \cdot \frac{\sqrt{3+\sqrt{6}}}{\sqrt{3+\sqrt{6}}} = \frac{\sqrt{3-\sqrt{6}}\sqrt{3+\sqrt{6}}}{\sqrt{3^2-\sqrt{6}^2}}$

19. $\frac{2+\sqrt[3]{3}}{\sqrt[3]{6}} \cdot \frac{\sqrt[3]{6}}{\sqrt[3]{6}} = \frac{2\sqrt[3]{6}+\sqrt[3]{108}}{\sqrt[3]{6}}$

Add if possible.

20. $2\sqrt{2x} + 6\sqrt{2x} = 8\sqrt{2x}$

21. $4\sqrt{3x} + 5\sqrt{10x}$ not possible

Subtract if possible.

22. $4\sqrt{3} - 3\sqrt{4} = 4\sqrt{3} - 6$

23. A garden has width $\sqrt{13}$ and length $7\sqrt{13}$. What is the perimeter of the garden in simplest radical form?

Simplify. $16\sqrt{13} + \sqrt{13} = 17\sqrt{13}$

24. $20^{\frac{1}{2}} \cdot 20^{\frac{1}{2}} = 20$

25. $9^{-\frac{2}{5}} = \frac{1}{9^{\frac{2}{5}}} = \frac{1}{3^{\frac{4}{5}}} = \frac{1}{243}$

Multiply.

26. $(-5-\sqrt{3})^2 = (25 + 10\sqrt{3} + 3) = 28 + 10\sqrt{3}$

27. $(8-\sqrt{2})(9+\sqrt{5}) = 72 - 9\sqrt{2} + 8\sqrt{5} - \sqrt{10}$

28. $(\sqrt{7}+\sqrt{10})(\sqrt{7}-\sqrt{10}) = 7 - 10 = -3$

29. Simplify the radical expression. Use absolute value symbols if needed.

$\sqrt[3]{625x^{12}y^{32}}$

$5|x^4|y^8$

30. The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$. Find the radius, to the nearest hundredth, of a sphere with a volume of 10 cubic inches.

$10 = \frac{4}{3}\pi r^3$
 $4a^2b^5\sqrt{2a}$

31. Simplify $\sqrt[3]{128a^7b^{15}}$. Assume all variables are positive.

$4a^2b^5\sqrt{2a}$

32. Simplify $-\sqrt{10} - 6\sqrt{36} - 5\sqrt{10}$

$-36 - 6\sqrt{10}$

33. Write the exponential expression $6x^{\frac{2}{3}}$ in radical form.

$6\sqrt[3]{x^2}$

34. Write the radical expression $\sqrt[5]{\frac{5}{9}}$ in exponential form.

$\frac{5}{9} \times \frac{1}{9}$

35. Write $(27a^9)^{\frac{2}{3}}$ in simplest form.

$27^{\frac{2}{3}}a^6 = \frac{9^2}{3^2}a^6 = \frac{81}{9}a^6 = 9a^6$

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30. $10 = \frac{4}{3}\pi r^3$

$\frac{30}{4\pi} = r^3$

$2.39 = r^3$

$1.34 = r$

8 - \sqrt{2}

9	72	-9\sqrt{2}
\sqrt{5}	8\sqrt{5}	-\sqrt{10}