

Algebra 1

Chapter 10

Section 10-2

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Common Perfect Squares List

$$\sqrt{1} = 1$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{36} = 6$$

$$\sqrt{49} = 7$$

$$\sqrt{64} = 8$$

$$\sqrt{81} = 9$$

$$\sqrt{100} = 10$$

$$\sqrt{121} = 11$$

$$\sqrt{144} = 12$$

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Simplify the radical expression

$$9(\sqrt{11x})^2$$

$$9(11x)$$

$$99x$$

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Simplify the radicals

$$\sqrt{36}$$

$$6$$

$$\sqrt{225}$$

$$15$$

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Rewrite the radical as an exponential expression

$$\sqrt[2]{13x}$$
$$(13x)^{1/2}$$

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Simplify the radicals

$$\sqrt{144d^4}$$

$$12d^2$$

$$\sqrt{(2c)^4}$$

$$(2c)^2$$

$$2^2 \cdot c^2$$

$$4c^2$$

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Which expression cannot be simplified?

$$\underline{-\sqrt{64}}$$

~~$$\sqrt{-64}$$~~

$$-8$$

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take note

Property Multiplication Property of Square Roots

Algebra

For $a \geq 0$ and $b \geq 0$, $\underline{\sqrt{ab}} = \sqrt{a} \cdot \sqrt{b}$.

Example

$$\underline{\sqrt{48}} = \underline{\sqrt{16}} \cdot \underline{\sqrt{3}} = \underline{4} \underline{\sqrt{3}}$$

take note

Property Division Property of Square Roots

Algebra

For $a \geq 0$ and $b > 0$, $\underline{\sqrt{\frac{a}{b}}} = \frac{\underline{\sqrt{a}}}{\underline{\sqrt{b}}}$.

Example

$$\sqrt{\frac{36}{49}} = \frac{\sqrt{36}}{\sqrt{49}} = \frac{6}{7}$$

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Simplify the radicals

$$\sqrt{9} \cdot \sqrt{8}$$

$$\sqrt{72}$$

$$\sqrt{36} \cdot \sqrt{2}$$

$$6\sqrt{2}$$

$$\sqrt{9a^3}$$

$$\sqrt{9a^2} \cdot \sqrt{a}$$

$$3a\sqrt{a}$$

$$\sqrt{\frac{27}{75}} \begin{matrix} \div 3 \\ \div 3 \end{matrix}$$

$$\sqrt{\frac{9}{25}}$$

$$\frac{\sqrt{9}}{\sqrt{25}}$$

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

$$10\sqrt{32x^7}$$

$$10\sqrt{16x^6} \sqrt{2x}$$

$$10 \cdot 4x^3 \sqrt{2x}$$

$$40x^3 \sqrt{2x}$$

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Simplify the products

$$\sqrt{12y} \cdot \sqrt{3y^7}$$

$$\sqrt{36y^8}$$

$$6y^4$$

$$5\sqrt{2s^9} \cdot \sqrt{50s^{-1}}$$

$$5\sqrt{100s^2}$$

$$5 \cdot 10s$$

$$50s$$

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Simplify the quotient

$$\sqrt{\frac{36x^{12}}{4x^4}}$$

$$\sqrt{9x^8}$$

$$3x^4$$

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Simplify the quotient

Rationalize the denominator.

$$\frac{\sqrt{11}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$\frac{\sqrt{33}}{3}$$

$$\frac{\sqrt{50}}{\sqrt{8a^3}} \cdot \frac{\sqrt{8a^3}}{\sqrt{8a^3}}$$

$$\frac{\sqrt{400a^3}}{8a^3} = \frac{20a\sqrt{a}}{8a^{3/2}}$$

$$\frac{5\sqrt{a}}{2a^2}$$

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