

Bell Ringer - Solve

$$120 - 6x^2 = -30$$

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$$\begin{array}{rcl} 120 & - & 6x^2 = -30 \\ -120 & & -120 \end{array}$$

$$\frac{-6x^2}{-6} = \frac{-150}{-6}$$

$$\sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

Simplifying Radicals

A radical is considered simplified when:

1. No perfect squares left under the radical sign
2. No radical signs remain in the denominator

Product Property $\sqrt{50} = \sqrt{25} \cdot \sqrt{2}$
 $= 5\sqrt{2}$

Look to factor out all perfect squares.

Quotient Property $\sqrt{\frac{11}{4}} = \frac{\sqrt{11}}{\sqrt{4}} = \frac{\sqrt{11}}{2}$

Simplify.

1. $8\sqrt{\frac{20}{4}}$

$$8 \frac{\sqrt{5}}{1}$$

$$\frac{8\sqrt{5}}{1}$$

$$8 \frac{\sqrt{20}}{\sqrt{4}}$$

$$\frac{8\sqrt{5}\sqrt{4}}{2}$$

$$\frac{8 \cdot \cancel{2} \cdot \sqrt{5}}{\cancel{2}}$$

$$8\sqrt{5}$$

Simplify.

$$2. \frac{\sqrt{40}}{14}$$

$$\frac{\sqrt{4} \cdot \sqrt{10}}{14}$$

$$\frac{\cancel{2} \sqrt{10}}{\cancel{14}_7} = \frac{\sqrt{10}}{7}$$

Simplify.

$$3. \frac{\sqrt{6} \cdot \sqrt{36}}{\sqrt{2}}$$

$$\frac{\sqrt{3} \cdot \cancel{\sqrt{2}} \cdot \sqrt{36}}{\cancel{\sqrt{2}}}$$

$$6\sqrt{3}$$

Simplify.

4.
$$\frac{-2\sqrt{20}}{\sqrt{50}}$$

There are multiple ways to solve this problem. Next slides show the different methods.

$$\frac{-2 \cdot \cancel{\sqrt{2}} \cdot \sqrt{2} \cdot \cancel{\sqrt{5}}}{\sqrt{5} \cdot \cancel{\sqrt{5}} \cdot \cancel{\sqrt{2}}}$$

$$-\frac{2\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = -\frac{2\sqrt{10}}{\sqrt{25}} = -\frac{2\sqrt{10}}{5}$$

Simplify.

4. $\frac{-2\sqrt{20}}{\sqrt{50}}$

$$\frac{-2 \cdot \cancel{\sqrt{2}} \cdot \sqrt{10}}{\cancel{\sqrt{2}} \cdot \sqrt{25}}$$

$$= \frac{-2\sqrt{10}}{5}$$

Simplify.

4. $\frac{-2\sqrt{20}}{\sqrt{50}} \div \sqrt{10}$

$$\frac{-2\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{-2\sqrt{10}}{5}$$

Simplify.

$$4. \quad \frac{-2\sqrt{20}}{\sqrt{50}}$$

$$\frac{-2 \cdot \sqrt{4} \cdot \sqrt{5}}{\sqrt{2} \cdot \sqrt{25}} = \frac{-2 \cdot 2 \cdot \sqrt{5}}{5 \cdot \sqrt{2}} =$$

$$\frac{-4\sqrt{5}}{5\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{-4\sqrt{10}}{5 \cdot 2} = \frac{-4\sqrt{10}}{10} =$$

$$\frac{-2\sqrt{10}}{5}$$