

Jebra 17

- 1 Undo $\frac{+}{-}$
- 2 Undo $\frac{\times}{\div}$

* when dividing by a fraction, multiply by the reciprocal (flip it)

Name: _____

Date: _____

Solving Quadratic Equations Using Square Roots

UNIT QUESTION: How are real life scenarios represented by quadratic functions?

Today's Question: When does a quadratic have an imaginary solution? MCC9-12.A.REI.4b

Solving Quadratic Equations Using Square Roots

1. Get x^2 by itself. or get binomial squared by itself.
2. Take the square root of both sides of the equation.
3. There will ALWAYS be a positive answer and a negative answer. Use \pm signs
4. Check your answers!!!

Solve each equation.

$$1. \quad \frac{x^2 - 4}{+4 \quad +4} = 0$$

$$\sqrt{x^2} = \sqrt{4}$$

$$x = \pm 2$$

Check

$$x=2: (2)^2 - 4 = 0$$

$$4 - 4 = 0 \checkmark$$

$$x=-2: (-2)^2 - 4 = 0$$

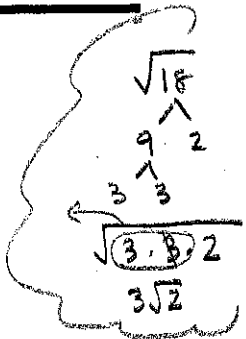
$$4 - 4 = 0 \checkmark$$

$$2. \quad \frac{\frac{1}{2}x^2 + 3}{-3 \quad -3} = 12$$

$$\left(\frac{2}{1}\right) \frac{1}{2}x^2 = 9 \left(\frac{2}{1}\right)$$

$$\sqrt{x^2} = \sqrt{18}$$

$$x = \pm 3\sqrt{2}$$



$$3. \quad \frac{2(x^2 - 5)}{+x^2} = -x^2 - 1$$

$$2x^2 - 10 = -x^2 - 1$$

$$\frac{3x^2 - 10}{+10} = \frac{-1}{+10}$$

$$\frac{3x^2}{3} = \frac{9}{3}$$

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

$$x = \pm \sqrt{3}$$

$$4. \quad \frac{\frac{1}{3}(x+4)^2 - 1}{+1 \quad +1} = 5$$

* Binomial is squared

$$\left(\frac{3}{1}\right) \frac{1}{3}(x+4)^2 = 6 \left(\frac{3}{1}\right)$$

$$\sqrt{(x+4)^2} = \sqrt{18}$$

$$x+4 = \pm 3\sqrt{2}$$

$$x = -4 \pm 3\sqrt{2}$$

$$5. \quad \frac{4(x+5)^2}{4} = \frac{64}{4}$$

$$\sqrt{(x+5)^2} = \sqrt{16}$$

$$x+5 = \pm 4$$

$$x = -5 \pm 4$$

$-5 + 4 = -1$
 $-5 - 4 = -9$

$$6. \quad \frac{2x^2 - 338}{+338 \quad +338} = 0$$

$$\frac{2x^2}{2} = \frac{338}{2}$$

$$\sqrt{x^2} = \sqrt{169}$$

$$x = \pm 13$$

$$7. \quad \frac{5(x-4)^2}{5} = \frac{125}{5}$$

$$\sqrt{(x-4)^2} = \sqrt{25}$$

$$x-4 = \pm 5$$

$$x = 4 \pm 5$$

$$8. \quad \frac{\frac{1}{7}x^2 - 3}{+3 \quad +3} = 4$$

$$\left(\frac{7}{1}\right) \frac{1}{7}x^2 = 7 \left(\frac{7}{1}\right)$$

$$\sqrt{x^2} = \sqrt{49}$$

$$x = \pm 7$$

