

MES44QCS-Lesson 2

Mr. Pineda

Aim: How can we solve quadratic equations using the square root method?

Do Now -

Find each square root.

1) $\sqrt{64} = \pm 8$ $\left\{ \begin{array}{l} +8 \cdot +8 = 64 \\ -8 \cdot -8 = 64 \end{array} \right.$

2) $\sqrt{36} = \pm 6$

3) $\sqrt{49} = \pm 7$

4) $\sqrt{0} = 0$

5) $\sqrt{25} = \pm 5$

6) $\sqrt{1} = \pm 1$

7) $\sqrt{9} = \pm 3$

8) $\sqrt{4} = \pm 2$

$$-\sqrt{72} \neq \sqrt{72}$$

Find each square root. Round to the nearest whole number.

$$9) -\sqrt{200} = -14.$$

$$10) \sqrt{144} = \pm 12$$

$$11) -\sqrt{80} = -9$$

$$12) -\sqrt{34} = -6$$

$$13) -\sqrt{127} = -11$$

$$14) \sqrt{1} = \pm 1$$

$$15) -\sqrt{36} = -6$$

$$16) -\sqrt{148} = -12$$

Find each square root.

$$17) -\sqrt{\frac{1}{4}} = -\frac{1}{2}$$

$$18) \sqrt{\frac{81}{121}} = \pm \frac{9}{11}$$

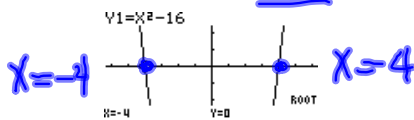
Why

$$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

Why?

$$\frac{9}{11} \cdot \frac{9}{11} = \frac{81}{121}$$

I - Investigating Different Ways to Solve Quadratic Equations

1) Solve $x^2 = 16$ by graphing2) Solve $x^2 = 16$ by factoring

$$x^2 - 16 = 0$$

$$(x + 4)(x - 4) = 0$$

$$x + 4 = 0 \quad x - 4 = 0$$

$$x = -4 \quad x = 4 \checkmark$$

3) Solve $x^2 = 16$ by taking square roots

$$x^2 = 16$$

$$x = \sqrt{16}$$

$$x = \pm 4 \checkmark$$

$$ax^2 + bx + c = 0 \leftarrow$$

$$x^2 = 16$$

$$\rightarrow x^2 - 16 = 0 \text{ (STANDARD FORM)}$$

II - Try them on your own

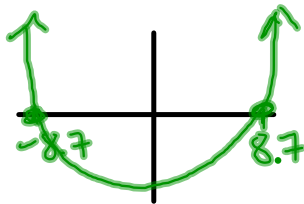
Solve each equation by taking square roots.

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1) $k^2 = 76$

$k = \pm\sqrt{76}$

$k = \pm 8.7$



2) $k^2 = 16$

$k = \pm\sqrt{16}$

$k = \pm 4$



3) $x^2 = 21$

$x = \pm\sqrt{21}$

$x = \pm 4.6$

4) $a^2 = 4$

$a = \pm\sqrt{4}$

$a = \pm 2$



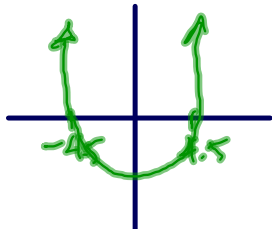
5) $x^2 + 8 = 28$

$x^2 = 28 - 8$

$x^2 = 20$

$x = \pm\sqrt{20}$

$x = \pm 4.5$



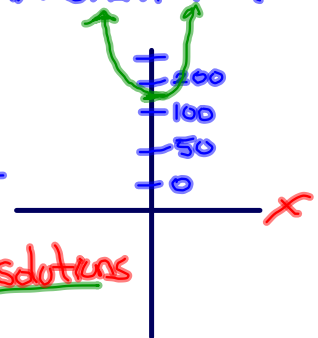
6) $\frac{2n^2}{2} = \frac{-144}{2}$

STANDARD: $2n^2 + 144 = 0$

$n^2 = -72$

$n = \pm\sqrt{-72}$

What are the solutions? No solutions



III- Exploring Further

1. Which of the three methods would you use to solve $x^2 = 5$? Explain, and then use the method to find the solutions.

$$x = \pm\sqrt{5} \approx \pm 2.2$$

2. Can the equation $x^2 = -9$ be solved by any of the three methods? Explain.

$$x = \sqrt{-9} \quad \text{No Real Solution}$$

