Solving Quadratic Equations:

1. Solve using Square Roots
2. Solve by factoring

Solve by using Square Roots.

1. Isolate the term being squared
2. Take the Square Root of both sides
3. Finish solving for x.

Solve by Factoring.

1. Rewrite into $ax^2 + bx + c = 0$
2. Factor
3. Find the zeros of each factor

Solve each. 1. $8x^2 - 3 = 29$ 2. $8x^2 + 14x = 15$

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$-29 \quad -29$

$8x^2 - 32 = 0$

$8(x^2 - 4) = 0$

$8(x+2)(x-2) = 0$

$x = \pm 2$

This equation can be solved using Square Roots or Factoring.

1. $8x^2 - 3 = 29$
$+3 \quad +3$

$\frac{8x^2}{8} = \frac{32}{8}$

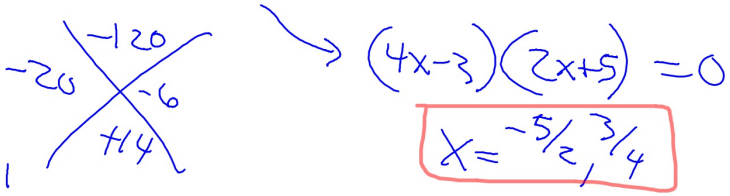
$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

$8x^2 + 14x = 15$

$-15 \quad -15$

$8x^2 + 14x - 15 = 0$



$(4x-3)(2x+5) = 0$

$x = -5/2, 3/4$

You can only solve a Quadratic Equation by using square roots IF: b = 0

You can only solve a Quadratic Equation by using factoring IF: it's factorable

Solving quadratic equations: $ax^2 + bx + c = 0$

Factoring

Works some of the time.

Solve by factoring:

$8x^2 + 10x - 3 = 0$

Square Roots

Works some of the time.

(when b = 0)

Solve using square roots:

$2x^2 + 8 = 64$

What if a Quadratic Equation can't be solved with either Square Roots or Factoring?

Sec 10-7: The Quadratic Formula

Equation must be in Standard Form:
$ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

This can solve ANY Quadratic Equation!

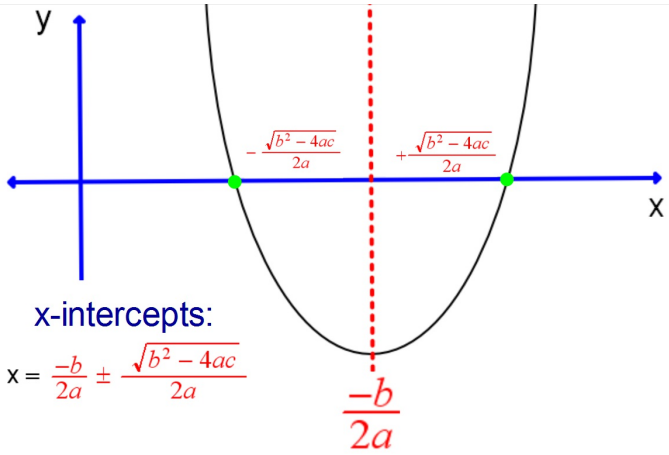
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sometimes written this way:

LOS

$$x = \frac{-b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

Remember, solving a quadratic equation is the same as finding the x-intercepts of the graph.



x-intercepts:

$$x = \frac{-b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve this quadratic equation using the Quadratic Formula.
Round to the nearest tenth if necessary.

$4x^2 + 5x = 13$

$4x^2 + 5x - 13 = 0$

$b^2 - 4ac = 233$

$x = \frac{-5 \pm \sqrt{233}}{8}$

$x = 1.3, -2.5$