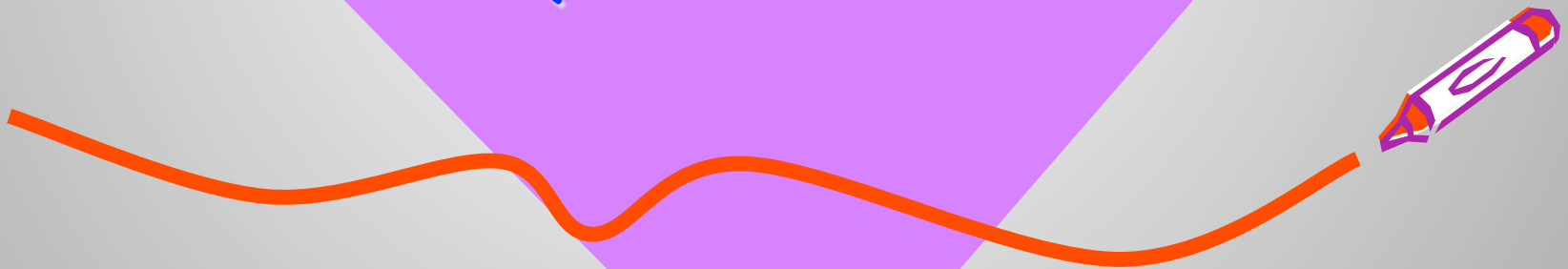


Ch 10.7

The Quadratic Formula



Using the Quadratic Formula

You have learned to solve quadratic equations by graphing, finding sq rts, & factoring. You can use the Quad. Formula to solve any Quad. Equations. (*Best for when solutions aren't whole #s)

Quad Formula:

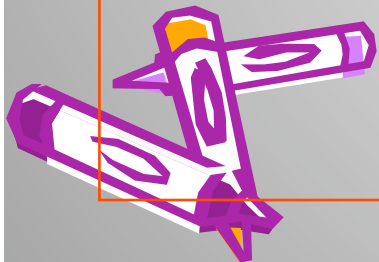
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \leftarrow \text{radicand}$$

- Write in Standard Form, then identify a, b, & c

Ex. $x^2 - 4x = 117 \rightarrow x^2 - 4x - 117 = 0$
 $a = 1, b = -4, c = -117$

- Plug a, b & c into the Formula:

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-117)}}{2(1)} \leftarrow \text{radicand}$$



- Simplify the $-(-4)$ & the radicand & $2a$.

* The radicand tells you the # of solutions:

-If positive: 2 solutions -If negative: no solution

-If zero: 1 solution

$$x = \frac{4 \pm \sqrt{16 + 468}}{2}$$

$$x = \frac{4 \pm \sqrt{484}}{2}$$

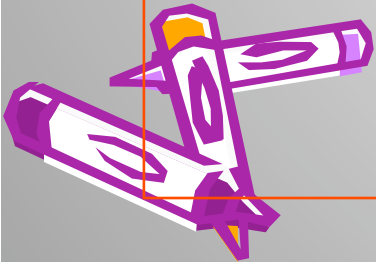
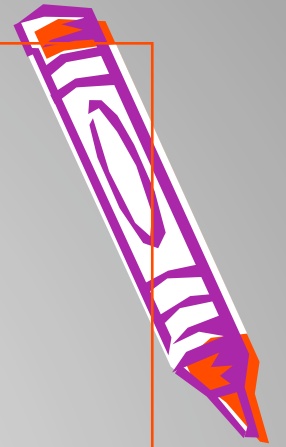
- Write as two equations and take Sq Rt of radicand.

*Positive radicand = 2 sols.

$$x = \frac{4 + 22}{2} \quad \text{or} \quad x = \frac{4 - 22}{2}$$

- Simplify

$$x = 13 \quad \text{or} \quad -9$$



$$\text{Ex. } 7x^2 - 8 = 2x \rightarrow 7x^2 - 2x - 8 = 0$$

$$a = 7, b = -2, c = -8$$

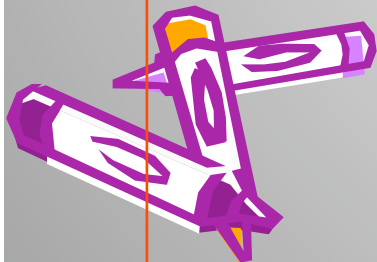
$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(7)(-8)}}{2(7)}$$

$$x = \frac{2 \pm \sqrt{4 + 224}}{2(7)} \quad x = \frac{2 \pm \sqrt{228}}{14} \quad (2 \text{ sol})$$

$$x = \frac{2 + 15.1}{14} \quad \text{or} \quad x = \frac{2 - 15.1}{14}$$

$$x = 1.22 \quad \text{or} \quad -.94$$

*Round to the nearest hundredth.



Try some

Use the Quad Form to solve. Round to the nearest 100th if needed.

1. $x^2 - 2x = 8$

2. $x^2 - 2x - 3 = 0$

3. $-3x^2 + 5x - 2 = 0$

4. $3x^2 + 4x - 8 = 0$

