

Name _____

Date _____

Unit 8

Do Now:

Lesson 9

- a) Solve for the x intercepts by completing the square, in simplest radical form: $x^2 + 6x - 3 = 0$

$$x^2 + 6x = 3$$

$$x^2 + 6x + \boxed{9} = 3 + \boxed{9}$$

$$(x+3)^2 = 12$$

$$x+3 = \pm\sqrt{12}$$

$$x = -3 \pm \sqrt{12}$$

$$\sqrt{4}\sqrt{3}$$

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

~~1.3~~ SOLVING QUADRATIC EQUATIONS USING THE QUADRATIC FORMULA

1. Solve for the x intercepts by using the quadratic formula, in simplest radical form: $x^2 + 6x - 3 = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad ax^2 + bx + c = 0$$

○

$$a = 1$$

$$b = 6$$

$$c = -3$$

$$x = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(-3)}}{2(1)}$$

do not
type $\sqrt{\quad}$
in calculator

$$x = \frac{-6 \pm \sqrt{48}}{2} \rightarrow \text{simplify } \sqrt{\quad} \text{ 1st!}$$

$$x = \frac{-6 \pm \sqrt{16}\sqrt{3}}{2}$$

○

$$x = \frac{\textcircled{-6} \pm \textcircled{4}\sqrt{3}}{\textcircled{2}}$$

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

"3 amigos" \rightarrow reduce

Steps for Solving Quadratics Equations Using the Quadratic Formula:

1. Put quadratic equation into standard form.
2. Identify the a, b & c values.
3. Write down the quadratic formula and substitute a, b, and c values into the formula.
4. Evaluate the formula and express answer according to directions. (simplest radical form or decimals)

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

2. To the nearest tenth, solve for the roots: $x^2 = 5x + 4$
 ~~$-5x - 4$~~ ~~$-5x - 4$~~

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

$$a = 1$$

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

$$b = -5$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-4)}}{2(1)}$$

$$c = -4$$

$$x = \frac{5 \pm \sqrt{41}}{2}$$

$$\frac{5 + \sqrt{41}}{2}$$

$$\frac{5 - \sqrt{41}}{2}$$

$$\boxed{5.7}$$

Alpha
y=
enter

$$\boxed{-0.7}$$

3. To the nearest hundredth, solve for the x-intercepts: $2x^2 + 7x = 3$

$$2x^2 + 7x - 3 = 0$$

$$a = 2$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-3)}}{2(2)}$$

$$b = 7$$

$$c = -3$$

$$x = \frac{-7 \pm \sqrt{73}}{4}$$

$$\boxed{+0.39}$$

$$\boxed{-3.89}$$

4. Write the solution set for the equation in simplest radical form: $3x^2 + 2 = -6x$

$$a = 3$$

$$b = 6$$

$$c = 2$$

$$x = \frac{-6 \pm \sqrt{6^2 - 4(3)(2)}}{2(3)}$$

$$\begin{aligned} &+6x + 6x \\ &3x^2 + 6x + 2 = 0 \end{aligned}$$

$$x = \frac{-6 \pm \sqrt{36 - 24}}{6}$$

$$x = \frac{-6 \pm 2\sqrt{3}}{6}$$

$$x = \frac{-6 \pm \sqrt{12}}{6}$$

$$\begin{aligned} &\sqrt{4}\sqrt{3} \\ &2\sqrt{3} \end{aligned}$$

$$x = \frac{-6 \pm 2\sqrt{3}}{6}$$

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

5. To the nearest hundredth, write the solution set for the equation: $9x^2 + 4x = 16$

$$a = 9$$

$$b = 4$$

$$c = -16$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(9)(-16)}}{2(9)}$$

$$\begin{aligned} &= 16 + 16 \\ &9x^2 + 4x - 16 = 0 \end{aligned}$$

$$x = \frac{-4 \pm \sqrt{16 + 576}}{18}$$

$$x = \frac{-4 \pm \sqrt{592}}{18}$$

$$x = \frac{-4 + \sqrt{592}}{18}$$

$$x = \frac{-4 - \sqrt{592}}{18}$$

$$1.13$$

and

$$-1.57$$

