Name _____

Date _____ ____

Do Now:

Lesson 9

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

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

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

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

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

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

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

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

~~Lesson~~ SOLVING QUADRATIC EQUATIONS USING THE QUADRATIC FORMULA

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

◯

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

$a = 1$

$b = 6$

$c = -3$

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

→ do not type √ in calculator

calc

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

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

◯

$$x = \frac{\cancel{-6} \pm \cancel{4}\sqrt{3}}{\cancel{2}} \qquad \boxed{x = -3 \pm 2\sqrt{3}}$$

"3 amigos" → reduce

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

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

$-5x - 4 \quad -5x - 4$

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

$a = 1$

$b = -5$

$c = -4$

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

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

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

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

$\downarrow$ Alpha $\quad \downarrow$
$y =$
$\boxed{5.7}$ enter $\boxed{-.7}$

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

$2X^2 + 7X - 3 = 0$ $\qquad a = 2$

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

$\qquad c = -3$

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

$\boxed{+.39}$ $\boxed{-3.89}$

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

$a = 3$
$b = 6$
$c = 2$

$$\frac{+6x \quad +6x}{3x^2 + 6x + 2 = 0}$$

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

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

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

$$x = \frac{-6 \pm \sqrt{12}}{6} \qquad \sqrt{4}\sqrt{3} \quad 2\sqrt{3}$$

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

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

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

$a = 9$
$b = 4$
$c = -16$

$$\frac{-16 \quad -16}{9x^2 + 4x - 16 = 0}$$

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

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

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

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

$$\boxed{1.13} \text{ and } \boxed{-1.57}$$