

Algebra 2  
4.3 – Solving Quadratics REVIEW

Name: KEY

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Solve the following problem by the specified method.

A.) GRAPHING

$$x = \frac{-4}{2(-1/2)} = \frac{-4}{-1} = 4$$

$$y = -\frac{1}{2}x^2 + 4x - 4$$

$$y = -\frac{1}{2}(4)^2 + 4(4) - 4$$

Opens: DOWN =  $-8 + 16 - 4$

Axis of Symmetry:  $x = 4$

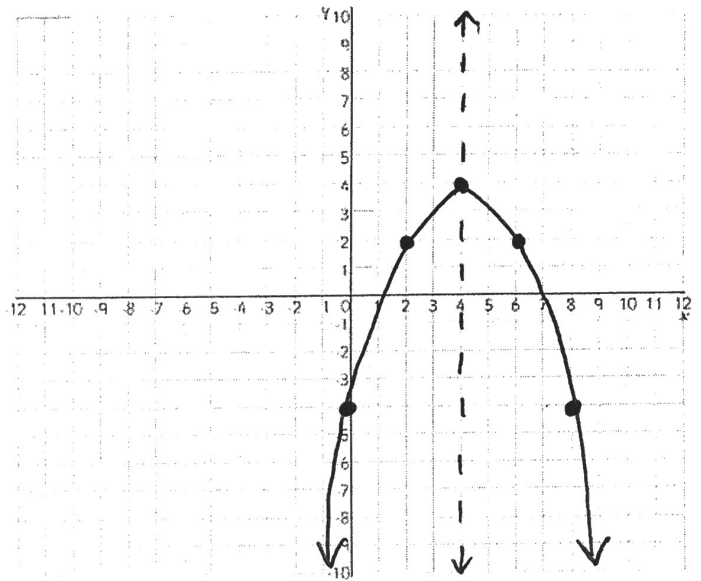
Vertex:  $(4, 4)$

Max/Min: MAX

Domain:  $(-\infty, \infty)$

Range:  $(-\infty, 4]$

x	y
2	2
0	-4



End Behavior:

As  $x \rightarrow \infty, f(x) \rightarrow -\infty$

$\rightarrow -\infty, f(x) \rightarrow -\infty$

Zero(s):  $x = 1.172, x = 6.83$

B.) FACTORING

$$3x^2 + 6x - 1 = 2 - 2x$$



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

$$3x^2 + 9x - 1x - 3 = 0$$

$$3x(x+3) - 1(x+3) = 0$$

$$(x+3)(3x-1) = 0$$

$$x = -3 \quad x = 1/3$$

C.) QUADRATIC FORMULA (Simplified & Exact)

$$3x^2 - 9x + 4 = -3 + 3x$$

$$3x^2 - 12x + 7 = 0$$

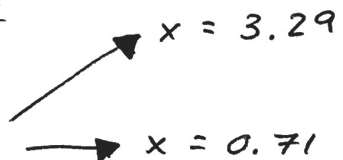
$$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(3)(7)}}{2(3)}$$

$$x = \frac{12 \pm \sqrt{144 - 84}}{6}$$

$$x = \frac{12 \pm \sqrt{60}}{6}$$

$$x = \frac{12 \pm 2\sqrt{15}}{6}$$

$$x = \frac{6 \pm \sqrt{15}}{3}$$



D.) COMPLETING THE SQUARE

$$4x^2 - 8x + 9 = 3x^2 - 6x - 11$$

$$x^2 - 2x + 20 = 0$$

$$x^2 - 2x + \underline{1} = -20 + \underline{1}$$

$$(x-1)^2 = -19$$

$$x-1 = \pm \sqrt{-19}$$

$$x = 1 \pm i\sqrt{19}$$

E.) SQUARE ROOT METHOD

$$4 - 2(x+5)^2 = 28$$

$$-2(x+5)^2 = 24$$

$$(x+5)^2 = -12$$

$$x+5 = \pm \sqrt{-12}$$

$$x+5 = \pm 2i\sqrt{3}$$

$$x = -5 \pm 2i\sqrt{3}$$

Solve each quadratic equation. Method of Choice.

F.)  $5x^2 + 4x + 4 = 3x + 2$

$$5x^2 + x + 2 = 0$$

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

$$x = \frac{-1 \pm \sqrt{1-40}}{10}$$

$$x = \frac{-1 \pm \sqrt{-39}}{10}$$

$$x = \frac{-1 \pm i\sqrt{39}}{10}$$

G.)  $2(x+5)^2 + 64 = 24$

$$2(x+5)^2 = -40$$

$$(x+5)^2 = -20$$

$$x+5 = \pm \sqrt{-20}$$

$$x = -5 \pm 2i\sqrt{5}$$

H.)  $5x^2 + 6x - 10 = 4x^2 + 10x$

$$x^2 - 4x - 10 = 0$$

$$x^2 - 4x + \underline{4} = 10 + \underline{4}$$

$$(x-2)^2 = 14$$

$$x-2 = \pm \sqrt{14}$$

$$x = 2 \pm \sqrt{14}$$

I.)  $3x^2 - 12x + 5 = 2x - 3$

$$3x^2 - 14x + 8 = 0$$

$$3x^2 - 12x - 2x + 8 = 0$$

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

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

$$x-4 = 0 \quad 3x-2 = 0$$

$$x = 4 \quad x = 2/3$$

$$\begin{array}{r} 24 \\ -12 \quad -2 \\ \hline -14 \end{array}$$