

Name: _____
 Date: _____
 Class: _____

Algebra
 Unit 10
 HW 10-1

1) Solve: $x^2 + 8x + 3 = 0$ (Simp rad form)

$a \rightarrow 1$
 $b \rightarrow 8$
 $c \rightarrow 3$

$$\frac{-8 \pm \sqrt{8^2 - 4(1)(3)}}{2(1)} = \frac{-8 \pm \sqrt{45}}{2}$$

$$= \frac{-8 \pm \sqrt{9 \cdot 5}}{2} = \frac{-8 \pm 3\sqrt{5}}{2}$$

$$= \frac{-4 \pm 1.5\sqrt{5}}{1} = -4 \pm 1.5\sqrt{5}$$

2) Solve: $2x^2 - 9x + 4 = 0$

$a \rightarrow 2$
 $b \rightarrow -9$
 $c \rightarrow 4$

$$\frac{-(-9) \pm \sqrt{(-9)^2 - 4(2)(4)}}{2(2)} = \frac{9 \pm \sqrt{49}}{4}$$

$$= \frac{9 \pm 7}{4}$$

$$\frac{9+7}{4} = \frac{16}{4} = 4.0$$

$$\frac{9-7}{4} = \frac{2}{4} = 0.5$$

3) Solve: $3x^2 + 4x - 1 = 0$

$a \rightarrow 3$
 $b \rightarrow 4$
 $c \rightarrow -1$

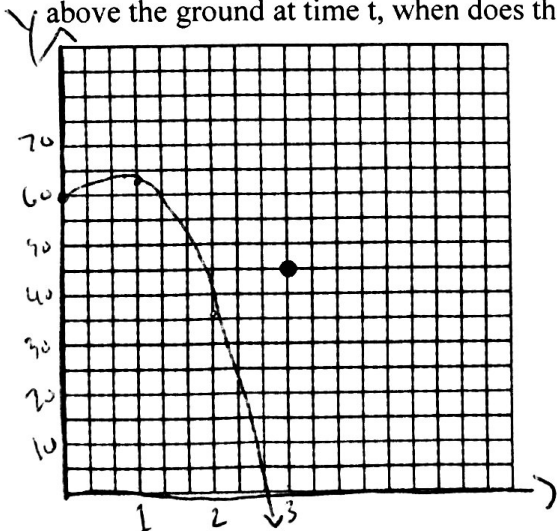
$$\frac{-4 \pm \sqrt{4^2 - 4(3)(-1)}}{2(3)} = \frac{-4 \pm \sqrt{28}}{6}$$

$$= \frac{-4 \pm 5.29}{6}$$

$$\frac{-4 - 5.29}{6} = -1.5$$

$$\frac{-4 + 5.29}{6} = 0.2$$

4) Sketch a graph of $h = -16t^2 + 20t + 60$. If h represents the height a ball is above the ground at time t, when does the ball hit the ground?



t	h
0	60
1	64
2	36
3	-24

$y = 0$
 $0 = -16t^2 + 20t + 60$
 $a \rightarrow -16$
 $b \rightarrow 20$
 $c \rightarrow 60$

$$\frac{-20 \pm \sqrt{20^2 - 4(-16)(60)}}{2(-16)}$$

$$= \frac{-20 \pm \sqrt{4240}}{-32}$$

$$= \frac{-20 \pm 65.12}{-32}$$

$$\frac{-20 - 65.12}{-32} = 2.7$$

$$\frac{-20 + 65.12}{-32} = -1.41$$

(no neg time)

★ ★
 2.7

Discard term

5) Find the zeros of this function: $f(x) = x^2 - 12x + 31$

$$0 = x^2 - 12x + 31$$

$$a \rightarrow 1$$

$$b \rightarrow -12$$

$$c \rightarrow 31$$

$$\frac{-(-12) \pm \sqrt{(-12)^2 - 4(1)(31)}}{2(1)}$$

$$\frac{12 \pm \sqrt{20}}{2}$$

$$\begin{aligned} & \rightarrow \frac{12 \pm \sqrt{45}}{2} \\ & = \frac{6 \pm 2\sqrt{5}}{2} \\ & = \frac{6 \pm \sqrt{5}}{1} \end{aligned}$$

$$= 6 \pm \sqrt{5}$$

6) Solve: $13x - 2x^2 - 6 = 2x^2 - 6x + 1$
 $-13x + 2x^2 + 6 + 2x^2 - 13x + 6$

$$0 = 4x^2 - 19x + 7$$

$$a \rightarrow 4$$

$$b \rightarrow -19$$

$$c \rightarrow 7$$

$$\frac{-(-19) \pm \sqrt{(-19)^2 - 4(4)(7)}}{2(4)}$$

$$\frac{19 \pm \sqrt{249}}{8}$$

$$\frac{19 \pm 15.78}{8}$$

$$\frac{19 + 15.78}{8} = 4.3$$

$$\frac{19 - 15.78}{8} = 4$$

7) Find the solution to the system: $t(x) = 3x^2 - 6x - 2$ and $g(x) = 5x^2 + 4x + 7$

$$\begin{aligned} 3x^2 - 6x - 2 &= 5x^2 + 4x + 7 \\ -3x^2 + 6x + 2 &-3x^2 + 6x + 2 \end{aligned}$$

$$0 = 2x^2 + 10x + 9$$

$$a \rightarrow 2$$

$$b \rightarrow 10$$

$$c \rightarrow 9$$

$$\frac{-10 \pm \sqrt{10^2 - 4(2)(9)}}{2(2)}$$

$$\frac{-10 \pm \sqrt{28}}{4}$$

$$\frac{-10 \pm 5.292}{4}$$

Find y

$$3(-1.777)^2 - 6(-1.777) - 2$$

$$y = 9.225$$

$$(-1.18, 9.22)$$

$$3(-3.823)^2 - 6(-3.823) - 2$$

$$y = 64.78$$

$$(-3.82, 64.78)$$

$$\boxed{x = -1.177} \quad \frac{-10 + 5.292}{4} \quad \frac{-10 - 5.292}{4} \quad \boxed{x = -3.823}$$