

Parabola and Line Systems

Name: _____

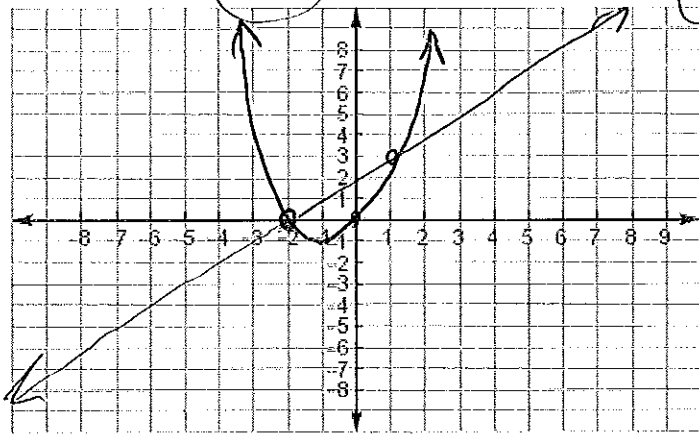
For each system, solve for x and y, draw a graph, and fill in the table.

1. $Y = x^2 + 2x$
 $Y = x + 2$

$$x^2 + 2x = x + 2$$

$$-x - 2 \quad -x - 2$$

x	-3	-2	-1	0	1
y	-1	0	1	2	3
	3	0	-1	0	3



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

$$x + 2$$

x	x^2	$2x$
-1	$-1x$	-2

$$(x+2)(x-1) = 0$$

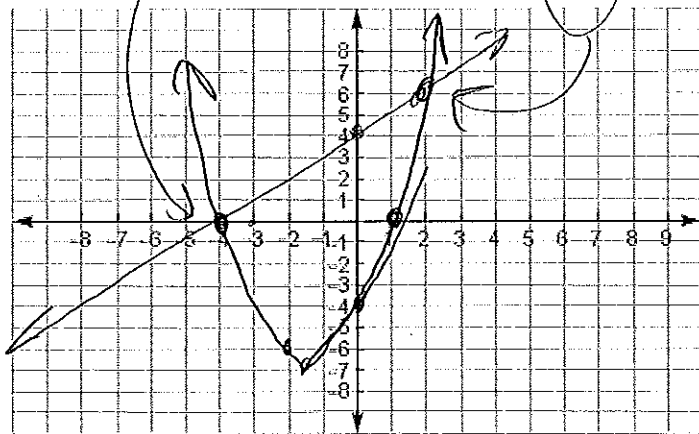
$$x = -2, x = 1$$

2. $Y = x^2 + 3x - 4$
 $Y = x + 4$

Set Equal: $x^2 + 3x - 4 = x + 4$

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

x	-4	-2	0	2	4
y ₁	0	-6	-4	6	24
y ₂	0	2	4	6	8



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

$$x + 4$$

x	x^2	$4x$
-2	$-2x$	-8

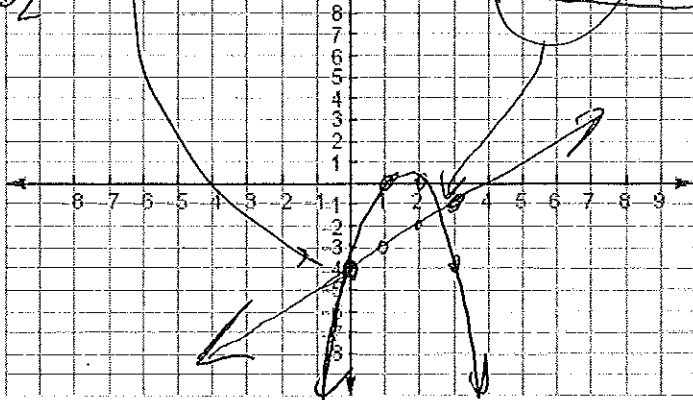
$$(x+4)(x-2) = 0$$

$$x = -4, x = 2$$

3. $Y = -2x^2 + 6x - 4$

$Y = x - 4$

x	0	1	2	2.5	3
y_1	-4	0	0	-1.5	-4
y_2	-4	-3	-2	-1.5	-1



Set Equal: $-2x^2 + 6x - 4 = x - 4$

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

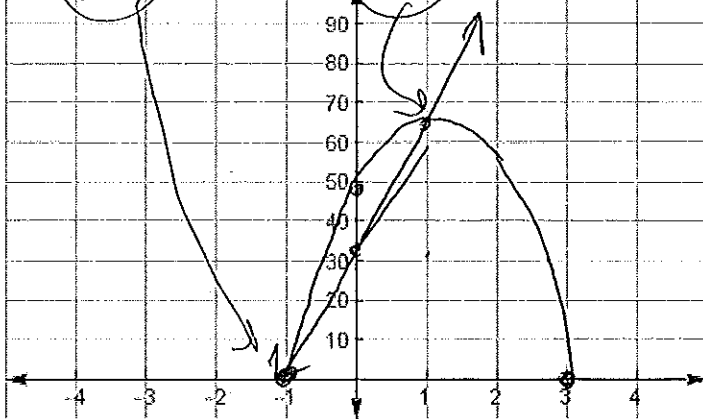
$x(-2x + 5) = 0$

$x = 0, x = \frac{-5}{-2} = 2.5$

4. $Y = -16x^2 + 32x + 48$ (What word problem can this equation mean?)

$Y = 32x + 32$

x	-1	0	1	2	3
y_1	0	48	64	48	0
y_2	0	32	64	96	128



Ball thrown up with initial speed of 32fps from initial height of 48 feet.

Set Equal:

$-16x^2 + 32x + 48 = 32x + 32$
 $-16x^2 + 16 = 0$

$-16x^2 + 16 = 0$

$-16x^2 = -16$

$x^2 = 1$

$x = \pm 1$

~~$-16x^2 + 32x + 48 = 32x + 32$
 $-16x^2 + 16 = 0$
 $-16(x^2 - 1) = 0$
 $-16(x-1)(x+1) = 0$
 $x-1 = 0$
 $x+1 = 0$
 $x = 1$
 $x = -1$~~