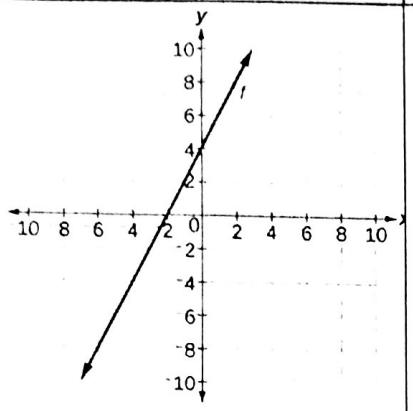
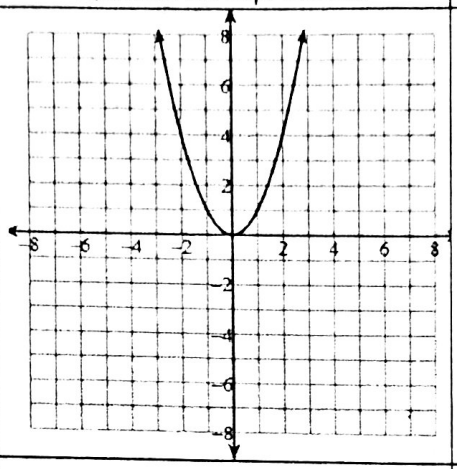
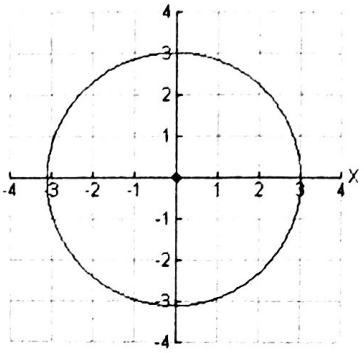
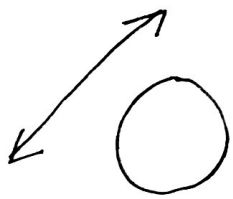
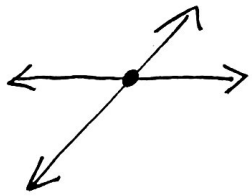
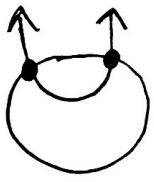
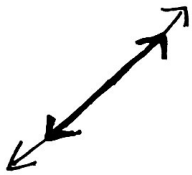
7.2 Solving Systems by Graphing

Linear Equations	Quadratic Equations	Circle Equations
		
$y = mx + b$	$y = ax^2 + bx + c$	$(x-h)^2 + (y-k)^2 = r^2$
m = slope ($\frac{\text{rise}}{\text{run}}$) b = y-int	Vertex = $(\frac{-b}{2a}$, plug in) Pattern: 1a, 3a, 5a	(h, k) = Center r = radius

A system of equations is a set of equations with the same VARIABLE(S). The solution(s) to a system of equations are the **points of intersection** and are to be written as **ordered pairs**. A system of equations can have...

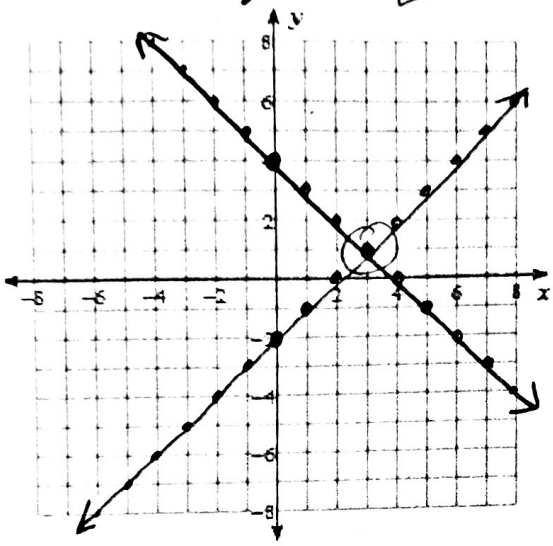
No real solutions	One real solution	Two real solutions	Infinite real solutions
			
No intersection	One intersection	Two intersections	Same line

Solve each system by graphing.

a) $y = x - 2$ $M=1$ $b=-2$

$y = -x + 4$ $M=-1$ $b=4$

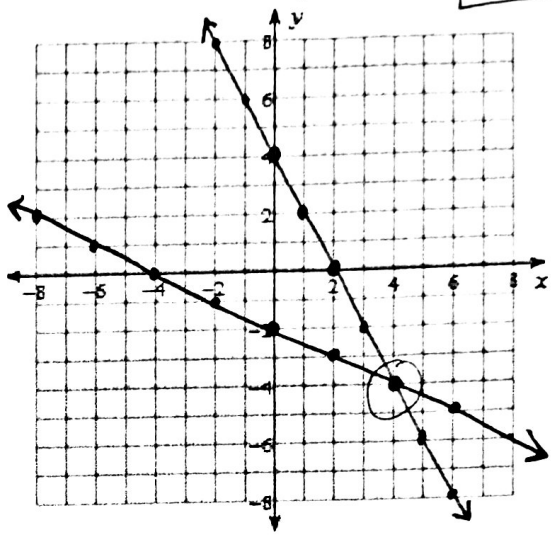
(3, 1)



b) $y = -2x + 4$ $M=-2$ $b=4$

$y = -\frac{1}{2}x - 2$ $M=-\frac{1}{2}$ $b=-2$

(4, -4)



c) $y = x^2 + 2x - 2$ $a=1$ $b=2$

$y = 2x - 2$ $M=2$ $b=-2$

$\frac{-b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = -1$

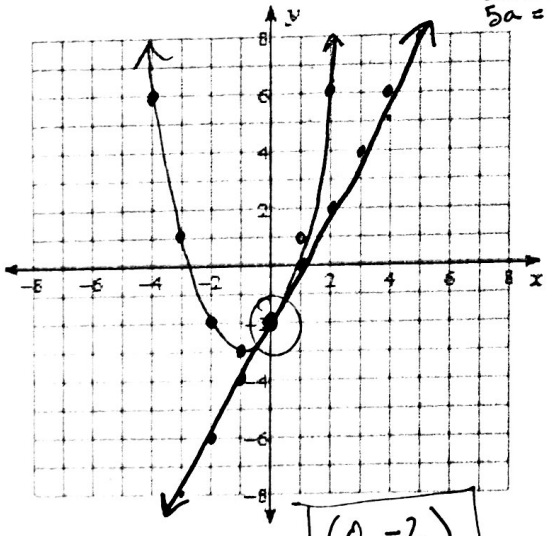
$y = (-1)^2 + 2(-1) - 2 = -3$

Vertex $(-1, -3)$

$1a = 1$

$3a = 3$

$5a = 5$



(0, -2)

d) $y = 3x$ $M=3$ $b=0$

$y = x^2 + 4x - 2$ $a=1$ $b=4$

$\frac{-b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = -2$

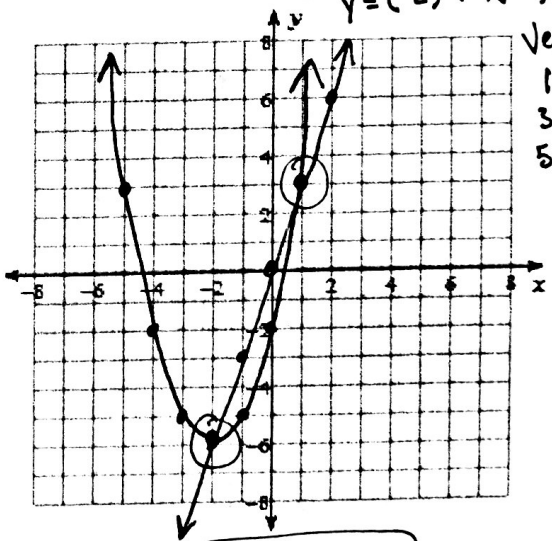
$y = (-2)^2 + 4(-2) - 2 = -6$

Vertex $(-2, -6)$

$1a = 1(1) = 1$

$3a = 3(1) = 3$

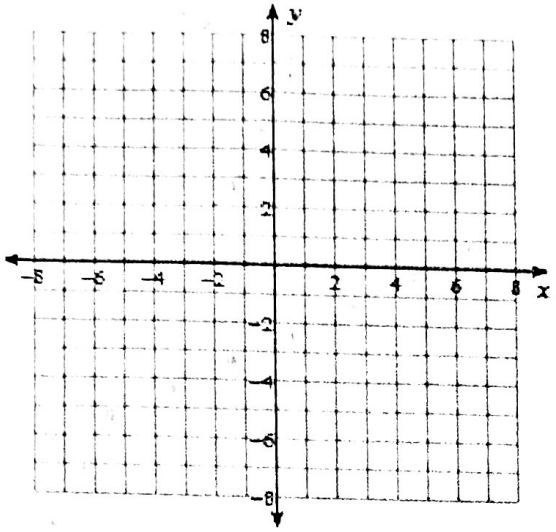
$5a = 5(1) = 5$



(-2, -6), (1, 3)

e) $y = 4x + 10$

$y = -x^2 + 4x + 6$



f) $y = x^2$ $a=1$ $b=0$ $\frac{-b}{2a} = \frac{0}{2} = 0$ $y = (0)^2 = 0$ Vertex $(0,0)$

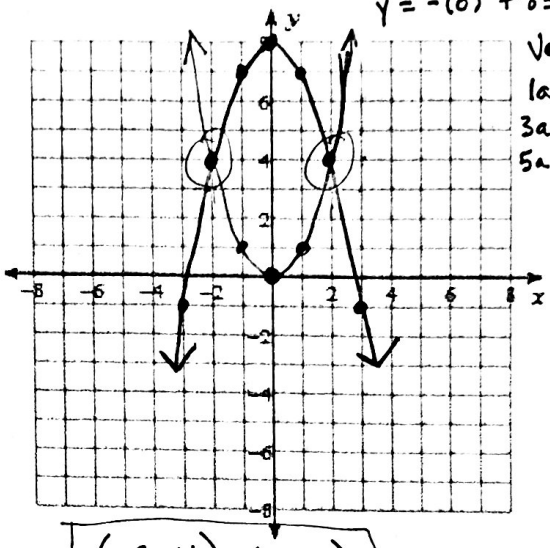
$y = -x^2 + 8$ $a=-1$ $b=0$ $\frac{-b}{2a} = \frac{-0}{2(-1)} = \frac{0}{-2} = 0$ $y = -(0)^2 + 8 = 0 + 8 = 8$

Vertex: $(0,8)$

$1a = 1(-1) = -1$

$3a = 3(-1) = -3$

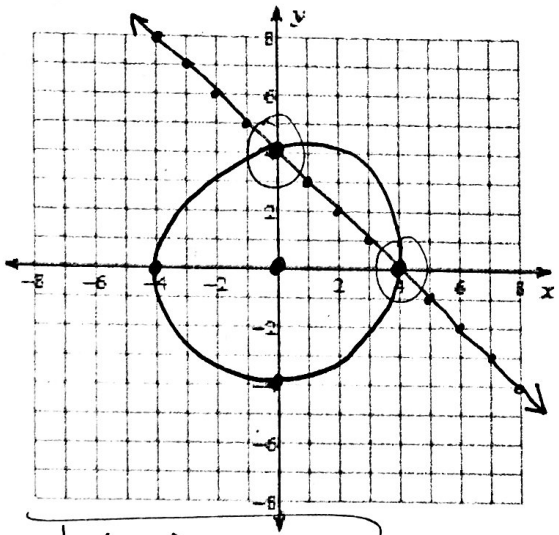
$5a = 5(-1) = -5$



$(-2,4), (2,4)$

g) $y = 4 - x = -x + 4$ $m=-1$ $b=4$

$x^2 + y^2 = 16$ Center: $(0,0)$ $r = \sqrt{16} = 4$

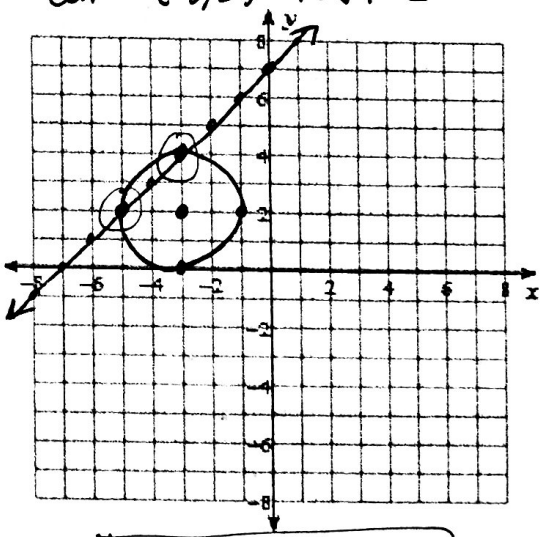


$(0,4), (4,0)$

h) $y = x + 7$ $m=1$ $b=7$

$(x+3)^2 + (y-2)^2 = 4$

Center: $(-3,2)$ $r = \sqrt{4} = 2$



$(-5,2), (-3,4)$

Line: $y = x$

Parabola: $y = x^2$

Circle: $x^2 + y^2$