7.2 Solving Systems by Graphing

The **solution** to a system of equations is where the graphs intersect.

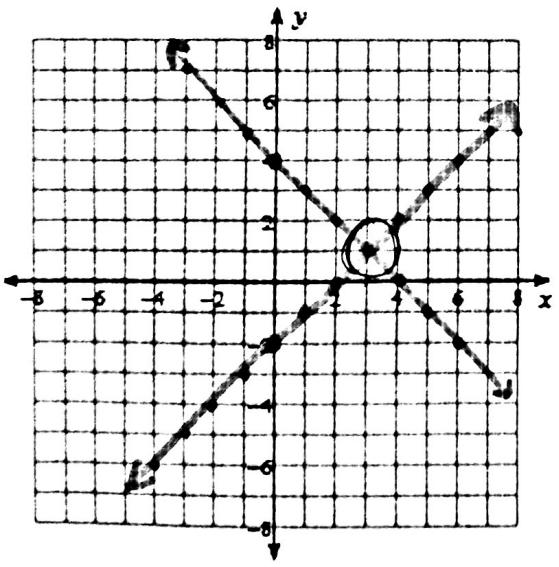
Let's refresh our memory on how to graph each kind of equation:

Linear	Quadratic	Circle
$y = mx + b$ ↑ slope ↑ y-intercept	1) $y = ax^2 + bx + c$ 2) $y = a(x-h)^2 + k$ 3) $y = a(x-p)(x-q)$ Find the vertex*, then use 1a 3a 5a *can use calculator	$(x-h)^2 + (y-k)^2 = r^2$ (h,k) is the center r is the radius

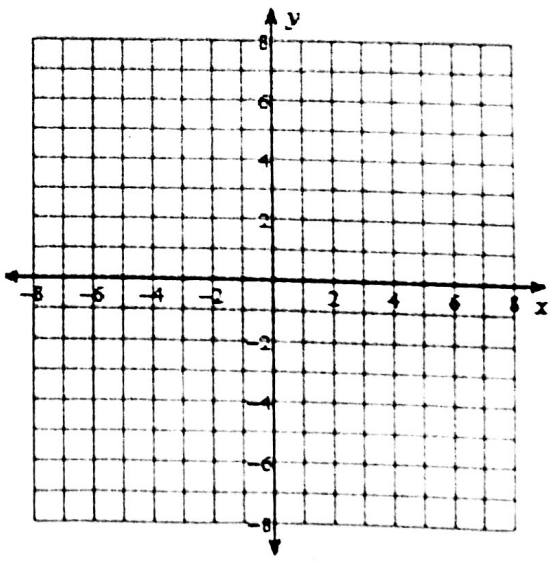
1) Solve each system by graphing.

a) $y = x - 2$
$y = -x + 4$

(3, 1)



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



c) $y = x^2 + 2x - 2$ V: $(-1,-3)$

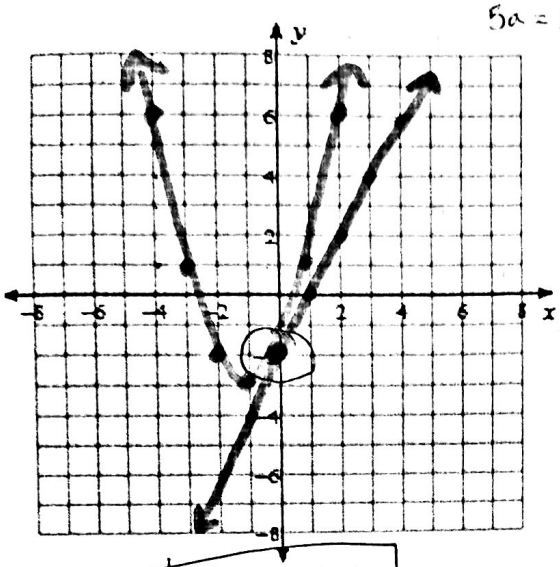
$y = 2x - 2$

$a = 1$

$1a = 1(1) = 1$

$3a = 3(1) = 3$

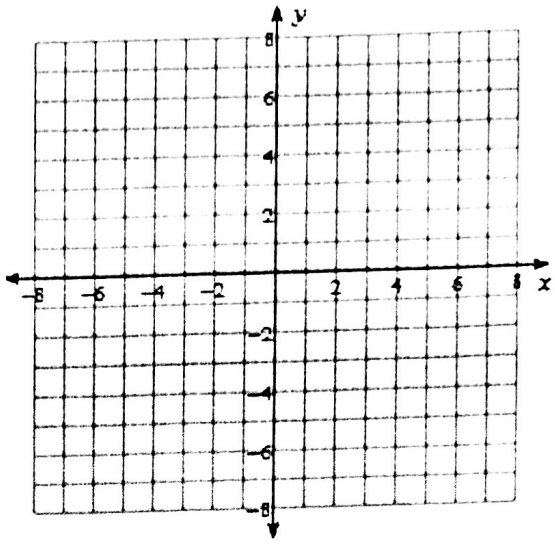
$5a = 5(1) = 5$



$(0,-2)$

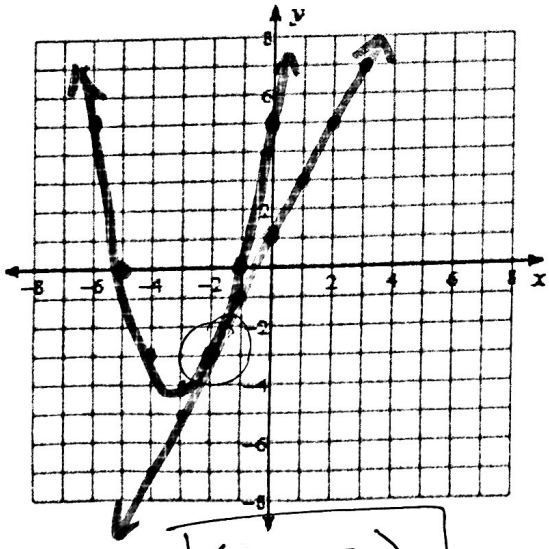
d) $y = 3x$

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



e) $y = 2x + 1$

$y = (x+5)(x+1)$



$(-2,-3)$

f) $y = x^2 = (x-0)^2 + 0$ V: $(0,0)$

$y = -x^2 + 8$

$= -(x-0)^2 + 8$ V: $(0,8)$

$a = 1$

$1a = 1$

$3a = 3$

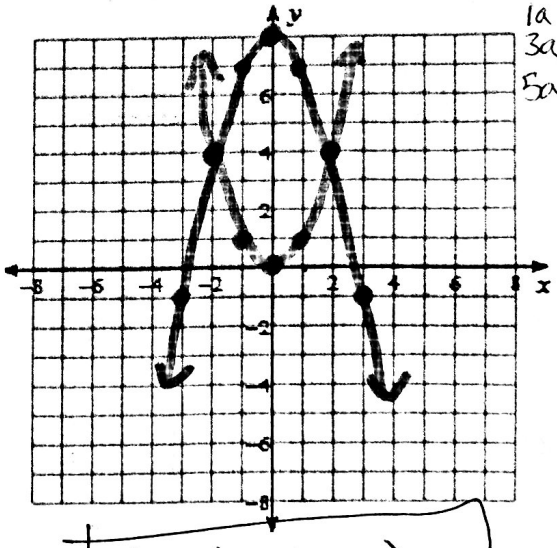
$5a = 5$

$a = -1$

$1a = -1$

$3a = -3$

$5a = -5$



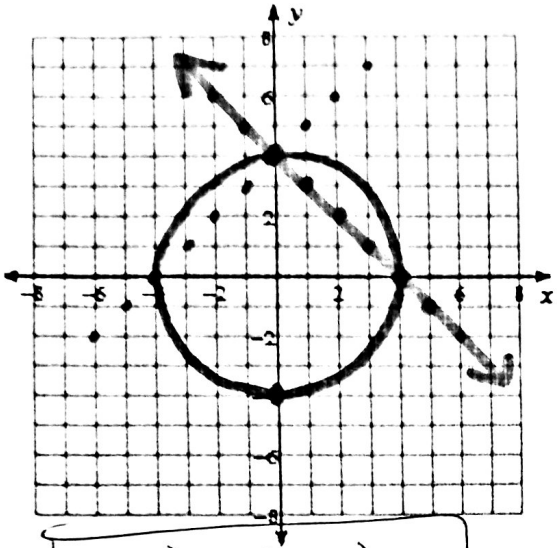
$(-2,4), (2,4)$

If the graphs do not intersect, then there is no solution.

$y = -x + 4$

g) $y = 4 - x$

$x^2 + y^2 = 16$

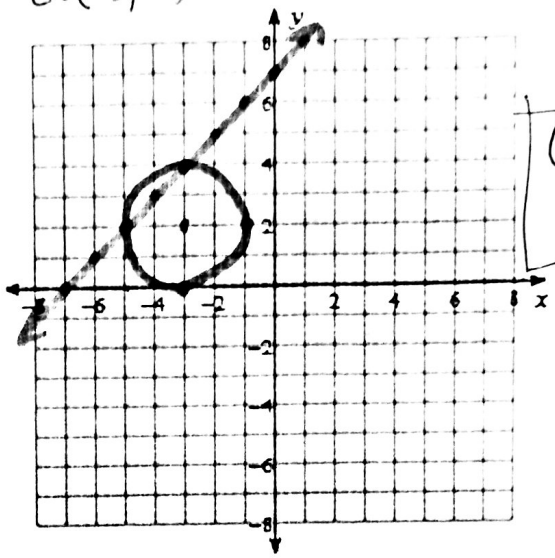


(0,4), (4,0)

h) $y = x + 7$

$(x+3)^2 + (y-2)^2 = 4$ ← $\sqrt{r^2} = \sqrt{4}$, $r = 2$

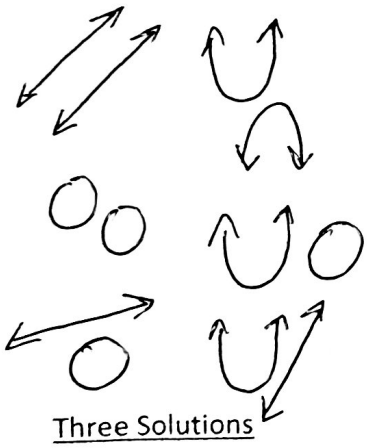
$C: (-3, 2)$ $r = 2$



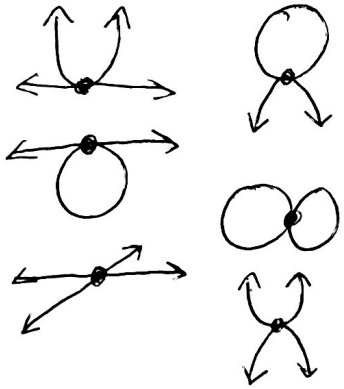
(-5, 2), (-3, 4)

2) Draw as many examples as you can think of for each category.

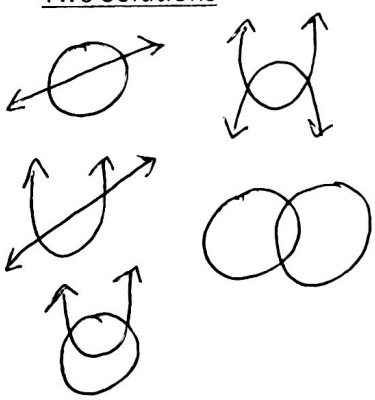
No Solution



One Solution

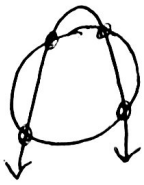


Two Solutions

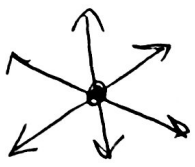


Three Solutions

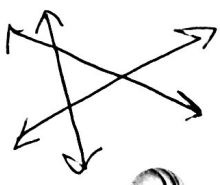
Four Solutions



System of 3+ equations



One solution



No solution

* Solutions are where all equations intersect