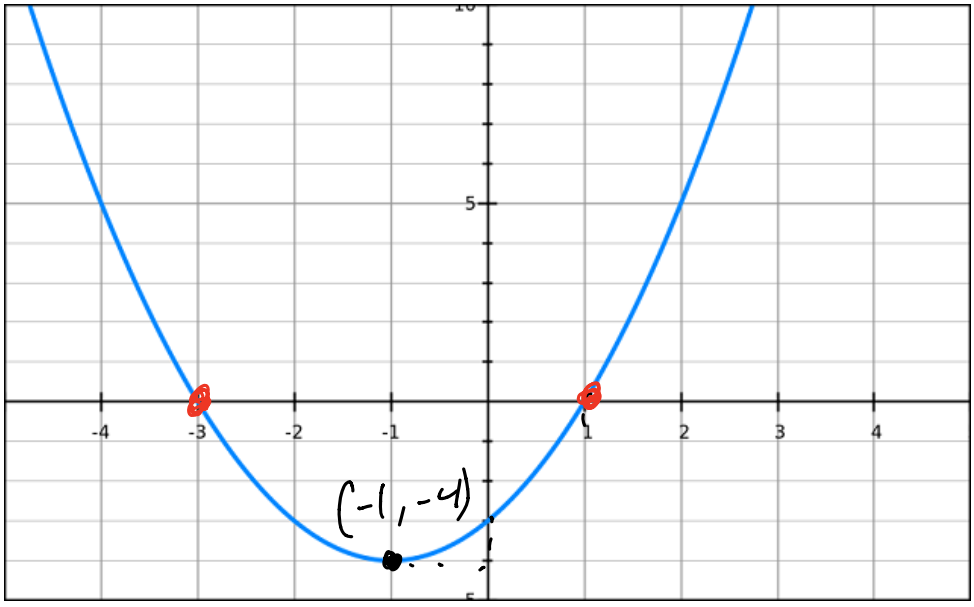
$y = (x+1)^2 - 4$

Solving Quadratics via Graph



When we say "solving" we are trying to find the places that the parabola crosses the x-axis. This is also called the "zeroes" or the "roots".

A quadratic equation is a 2nd degree polynomial.

In standard form, $ax^2 + bx + c = 0$, it is not obvious what the parabola will look like.

We complete the square so we can see it.

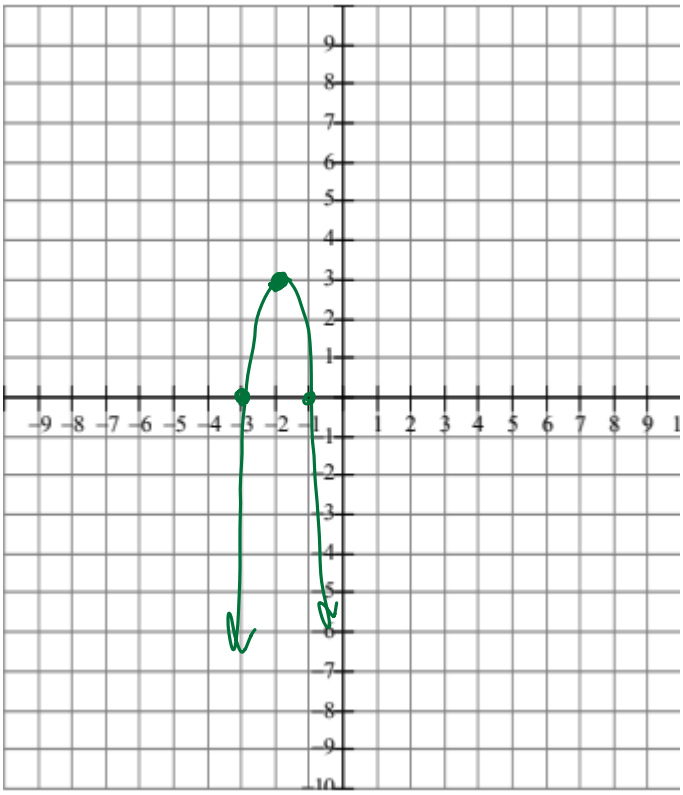
$-3x^2 - 12x - 9 = 0$

$-3(x^2 + 4x) - 9 = 0$

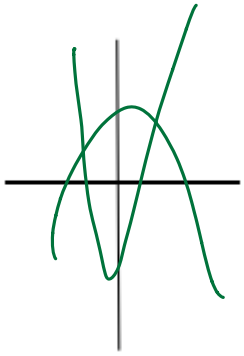
$-3(x+2)^2 + 12 - 9 = 0$

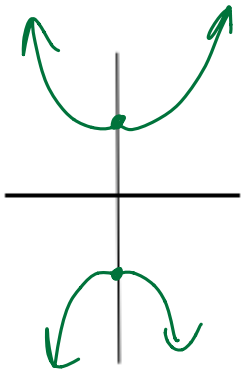
$-3(x+2)^2 + 3 = 0$

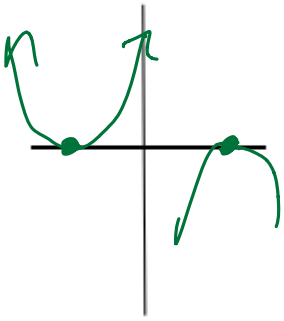
$x = -3 \pm -1$



Will we always have 2 x-intercepts?







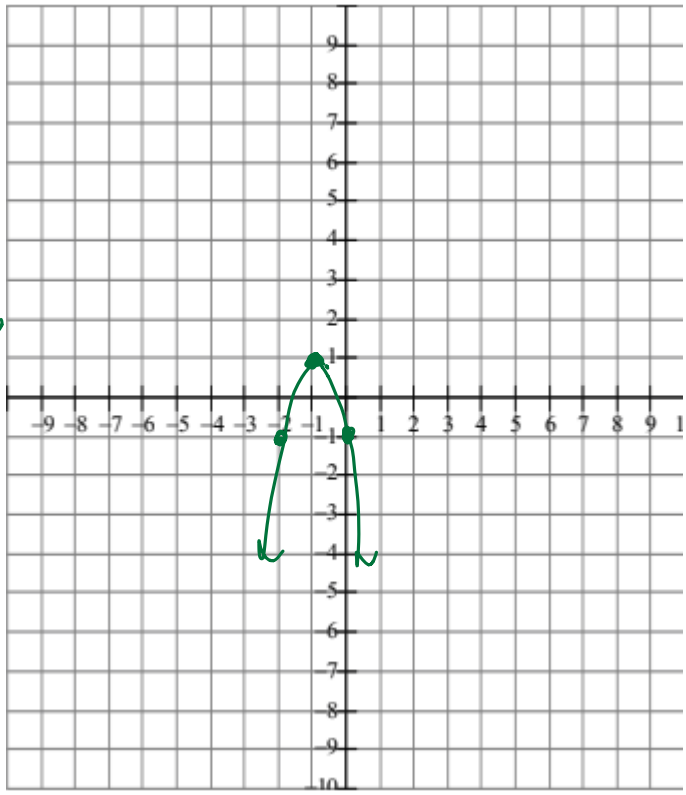
Lets try another:

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

$$2(x^2 + 2x) + 3 = 0$$

$$2(x+1)^2 - 2 + 3 = 0$$

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



Homework: Solve the following by graphing.

1. $x^2 + 6x + 5 = 0$
2. $x^2 + 4x + 4 = 0$
3. $0 = x^2 - 2x + 2$
4. $x^2 + 4x = 5$
5. $-x^2 + 2x - 1 = 0$
6. $2x^2 = -8x - 6$

Also, Pg 215
#1, 2, 17, 18