

Find the length of the sides:

1. The length of the longer leg of a right triangle is two more than the shorter leg. The hypotenuse is four more than the shorter leg.



$$(x)^2 + (x+2)^2 = (x+4)^2$$

$$\cancel{x^2} + \cancel{x^2} + 4x + 4 = \cancel{x^2} + \cancel{8x} + \cancel{16}$$

$$\cancel{-x^2} - 8x - 16 \quad \cancel{-x^2} + 8x + 16$$

$$x^2 - 4x - 12 = 0 \quad ac = \frac{-12}{-6} = 2$$

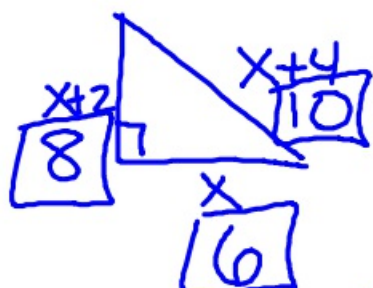
$$(x^2 - 6x)(2x - 12) = 0$$

$$x(x-6)2(x-6) = 0$$

$$(x+2)(x-6) = 0$$

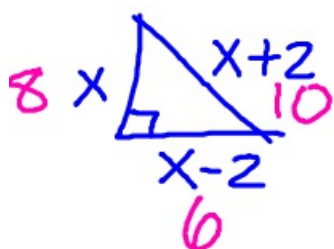
$$x+2=0 \quad x-6=0$$

$$\cancel{x=-2} \quad \boxed{x=6}$$



$$36 + 64 = 100$$

2. The shorter leg of a right triangle is two less than the longer leg. The hypotenuse is two more than the longer leg.



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

$$\cancel{x^2} + \cancel{x^2} - 4x + 4 = \cancel{x^2} + \cancel{4x} + 4$$

$$\cancel{-x^2} - 4x + 4 \quad \cancel{-x^2} - 4x - 4$$

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

$$x(x-8) = 0$$

$$x=0 \quad x-8=0$$

$$\boxed{x=8}$$

Use the following roots to find the equation for the quadratic function:

1. $x = \{-5, 1\}$

$$x = -5 \quad x = 1$$

$$x + 5 = 0 \quad x - 1 = 0$$

2. $x = \{-3/2, 4\}$

$$x = -3/2 \quad x = 4$$

$$2x + 3 = 0 \quad x - 4 = 0$$

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

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

$$y = x^2 + 4x - 5$$

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

$$y = 2x^2 - 8x + 3x - 12$$

$$y = 2x^2 - 5x - 12$$

3. $x = \{-9, -6\}$

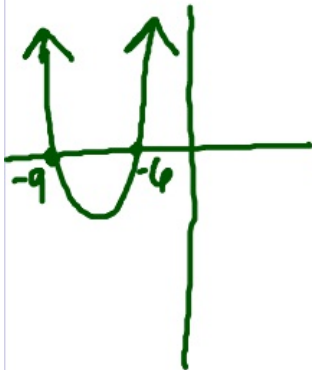
$$x = -9 \quad x = -6$$

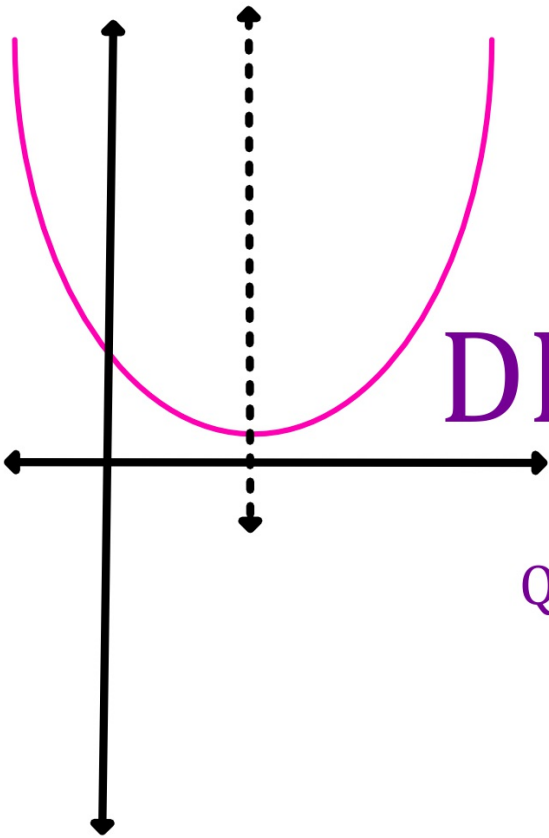
$$x + 9 = 0 \quad x + 6 = 0$$

$$y = (x + 9)(x + 6)$$

$$y = x^2 + 6x + 9x + 54$$

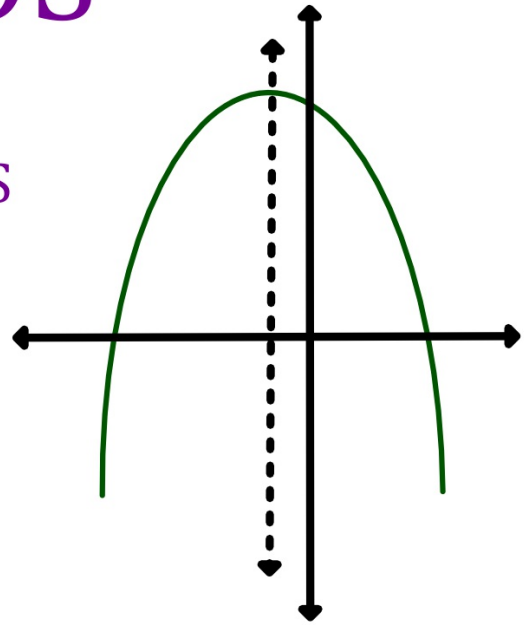
$$y = x^2 + 15x + 54$$





DESMOS

for
QUADRATICS



In groups,
Complete **WS 108**
(Back of yesterday's notes)