

## Lesson Two (y intercepts x intercepts)

Today you will find y and x intercepts for a parabola and use this to find the vertex.

Ex #1 Find x and y intercept and vertex for  $y = x^2 + 2x - 8$  (General form)

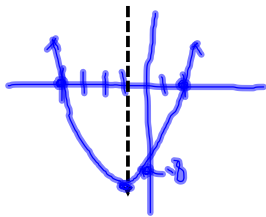
y intercept  $x=0$   $y = 0^2 + 2 \cdot 0 - 8$   
y int = -8

x intercept  $y=0$   
factor to solve

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

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

x int are 2 and -4  
middle



Vertex  $x = -1$

y value  $y = x^2 + 2x - 8$   
 $x = -1$   $y = (-1)^2 + 2(-1) - 8$   
 $= 1 - 2 - 8$

vertex  $(-1, -9)$

#2  $y = x^2 - 10x + 24$

y intercept = +24  
 $x=0$

x intercept  $y=0$

$$0 = x^2 - 10x + 24$$

$$= (x-4)(x-6)$$

x int = 4 and 6

x value of vertex = 5 (middle of 4 and 6)

y value of vertex

$$y = 5^2 - 10 \cdot 5 + 24$$

$$= -1$$

Vertex  $(5, -1)$

$y = x^2 - 6x$

y int = 0

x int  $y=0$

$$0 = x^2 - 6x \quad (x+0)(x-6) = 0$$

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

x int = 0, +6

x vertex = 3

y value =  $3^2 - 6 \cdot 3$

= -9

vertex  $(3, -9)$