

Let's Recap....

How do we find the y- intercept?

How do we find the roots? What are some other terms we could use for roots? What are the roots?

How do we find the AOS? What does AOS stand for? What does it mean?

Once we find the AOS, what else have we found?

What do we need now? How do we find it?

How do we know if the parabola opens up or down?

If it opens up, it has a __ (max or min) _? And the range is __ (greater than/equal to or less than/equal to) ___?

If it opens down _____ ??? _____

Vertex Form of a Parabola:

$$y = a(x - h)^2 + k$$

If the function is in this form, the vertex is found from (h,k).

****The h will be the OPPOSITE sign****

Remember... the h (from vertex form) is the same as x (from standard form) and the k (vertex form) is equal to the y (standard form)

Identify the vertex of the following functions.

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

$$y = (x - 7)^2 + 5$$

$$y = 8(x + 1)^2 + 10$$

Converting from Standard Form to Vertex Form

$$y = ax^2 + bx + c \longrightarrow y = a(x - h)^2 + k$$

To go from standard form to vertex form:

identify a,b,c

want a, h, k

$$a = a$$

$$x = \frac{-b}{2a} = h$$

Solve for y = k

* Substitute the values and rewrite

Example 1:

Change the following equation from standard form to vertex form

$$y = 8x^2 - 16x + 27$$

Example 2:

Convert the following to vertex form

$$y = 5x^2 - 40x + 67$$

Practice:

1) $y = 5x^2 - 10x + 37$

2) $y = 7x^2 + 28x + 19$

3) $y = -2x^2 - 24x - 75$

Converting from Vertex Form to Standard Form

$$y = a(x - h)^2 + k \longrightarrow y = ax^2 + bx + c$$

Example 1:

$$y = 5(x + 2)^2 - 9$$

Example 2:

$$y = -3(x - 4)^2 + 7$$

Practice:

1) $y = (x - 2)^2 + 6$

2) $y = 3(x - 3)^2 - 12$

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