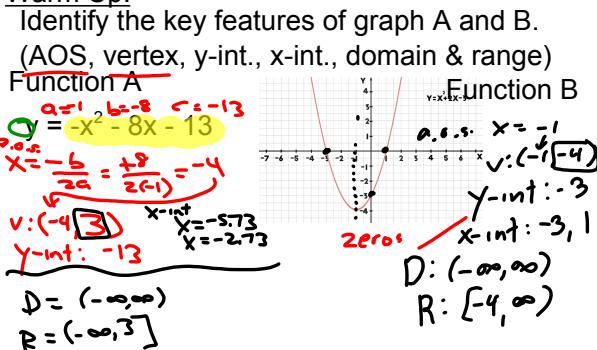
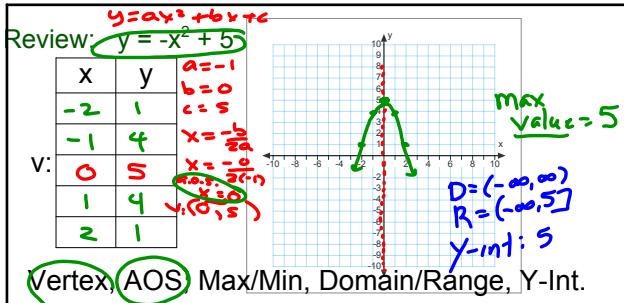


warm Up:

Vertex Form

Sep 2-12:19 PM

Sep 30-8:20 AM



Vertex Form

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

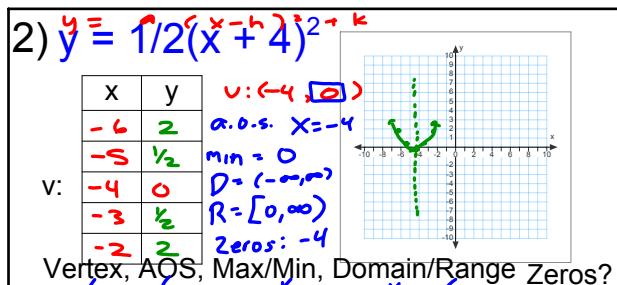
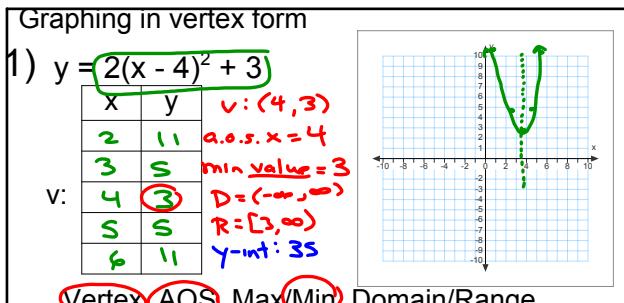
$v(h, k)$

a.o.s $x = h$

axis of symmetry

Sep 30-8:37 AM

Sep 30-9:09 AM



Sep 30-9:11 AM

Sep 30-9:09 AM

Write the equation in vertex form given the vertex and a point.

a. Vertex $(0, 1)$ Point $(-3, 10)$

$$\begin{aligned} y &= a(x-h)^2 + k \\ 10 &= a(-3-0)^2 + 1 \\ 10 &= a(9) + 1 \\ 10 &= 9a + 1 \\ 9 &= 9a \\ 1 &= a \end{aligned}$$

$$\begin{aligned} y &= a(x-h)^2 + k \\ y &= 1(x-0)^2 + 1 \\ y &= x^2 + 1 \end{aligned}$$

b. Vertex $(0, 1)$ Point $(-1, 6)$

c. Vertex $(0, 1)$ Point $(2, -1)$

Sep 12-8:29 AM

③ $v: (-5, 4)$ point $(-2, -14)$

$$\begin{aligned} y &= a(x-h)^2 + k \\ -14 &= a(-2+5)^2 + 4 \\ -14 &= a(3)^2 + 4 \\ -14 &= 9a + 4 \\ -18 &= 9a \\ -2 &= a \end{aligned}$$

$$\begin{aligned} y &= a(x-h)^2 + k \\ y &= -2(x+5)^2 + 4 \end{aligned}$$

Oct 4-8:39 AM

Convert between standard form and vertex form.

Hint: Find a , h , and k .

$$\begin{aligned} Ex \quad 1) \quad y &= x^2 + 4x - 7 \quad a=1 \quad h=-2 \quad k=-11 \\ X &= -\frac{b}{2a} = -\frac{4}{2(1)} = -2 \\ V: & (-2, -11) \end{aligned}$$

$$\begin{aligned} y &= ax^2 + bx + c \\ y &= a(x-h)^2 + k \end{aligned}$$

$$\begin{aligned} y &= (x+2)^2 - 11 \end{aligned}$$

Jul 23-2:45 PM

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

$$\begin{aligned} a.o.s. \quad x &= -\frac{b}{2a} = -\frac{12}{2(2)} = -3 \\ V: & (-3, 23) \end{aligned}$$

$$\begin{aligned} a=2 \quad h=-3 \quad k=-23 \\ y &= 2(x+3)^2 - 23 \end{aligned}$$

Feb 5-11:08 AM

Convert between vertex form and standard form

Ex 1) $y = 2(x-11)^2 + 5$

$$\begin{aligned} y &= 2(x-11)(x-11) + 5 \\ y &= 2(x^2 - 11x - 11x + 121) + 5 \\ y &= 2(x^2 - 22x + 121) + 5 \\ y &= 2x^2 - 44x + 242 + 5 \\ y &= 2x^2 - 44x + 247 \end{aligned}$$

Feb 5-11:09 AM

Ex 2) $f(x) = 5(x+2)^2 - 1$

$$f(x) = -5(x+2)(x+2) - 1$$

$$f(x) = -5(x^2 + 4x + 4) - 1$$

$$f(x) = -5x^2 - 20x - 20 - 1$$

$$f(x) = -5x^2 - 20x - 21$$

Feb 5-11:10 AM

Now, it is your
turn. Try in your
own.

Oct 4-7:35 AM