

0-3 Mini Quiz
2 Problems - 6 minutes

Sep 2-8:59 AM

0-3 Guided Notes #3
Vertex Form and Writing Equations

Objectives: Identify the vertex of a parabola when in vertex form
Convert parabolas into vertex form
Write quadratic equations given various information

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VERTEX FORM OF A PARABOLA

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

opp. of
what you see

VERTEX: (h, k)

Y-INTERCEPT: $h^2 + k$

POINT ON PARABOLA: (x, y)

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Find the vertex of the following parabolas.

Ex1. $y = 2(x-3)^2 + 7$ $(3, 7)$

Ex2. $y = 2(x+5)^2 - 8$ $(-5, -8)$

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Convert the following parabola to vertex form.

Ex3: $y = -2x^2 + 12x + 4$

CHANGES

set equal 0
Factor out "a"
Distribute the added value

COMPLETING THE SQUARE!

$$-2x^2 + 12x + 4 = 0$$

$$-2x^2 + 12x + \underline{\quad} = -4 + \underline{\quad}$$

$$-2(x^2 - 6x + \underline{9}) = -4 + \underline{-18}$$

$$-2(x-3)^2 = -22$$

$$y = -2(x-3)^2 + 22 \quad v: (3, 22)$$

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WRITING QUADRATIC FUNCTIONS

1. Standard/General Form

$$y = ax^2 + bx + c$$

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

2. Vertex Form

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

Ex.4: Given $f(-1) = -7$ and the maximum value is $f(2) = -1$

$$(-1, -7)$$

$$(2, -1)$$

$$y = a(x-2)^2 - 1$$

$$-7 = a(-1-2)^2 - 1$$

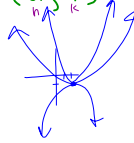
$$-7 = a(-3)^2 - 1$$

$$-7 = 9a - 1$$

$$-6 = 9a$$

$$-2/3 = a$$

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



Ex.5: Given x-intercepts 1 and 4 and y-intercept -8. $(0, -8)$

$$y = a(x-1)(x-4)$$

$$-8 = a(-1)(-4)$$

$$-8 = 4a$$

$$-2 = a$$

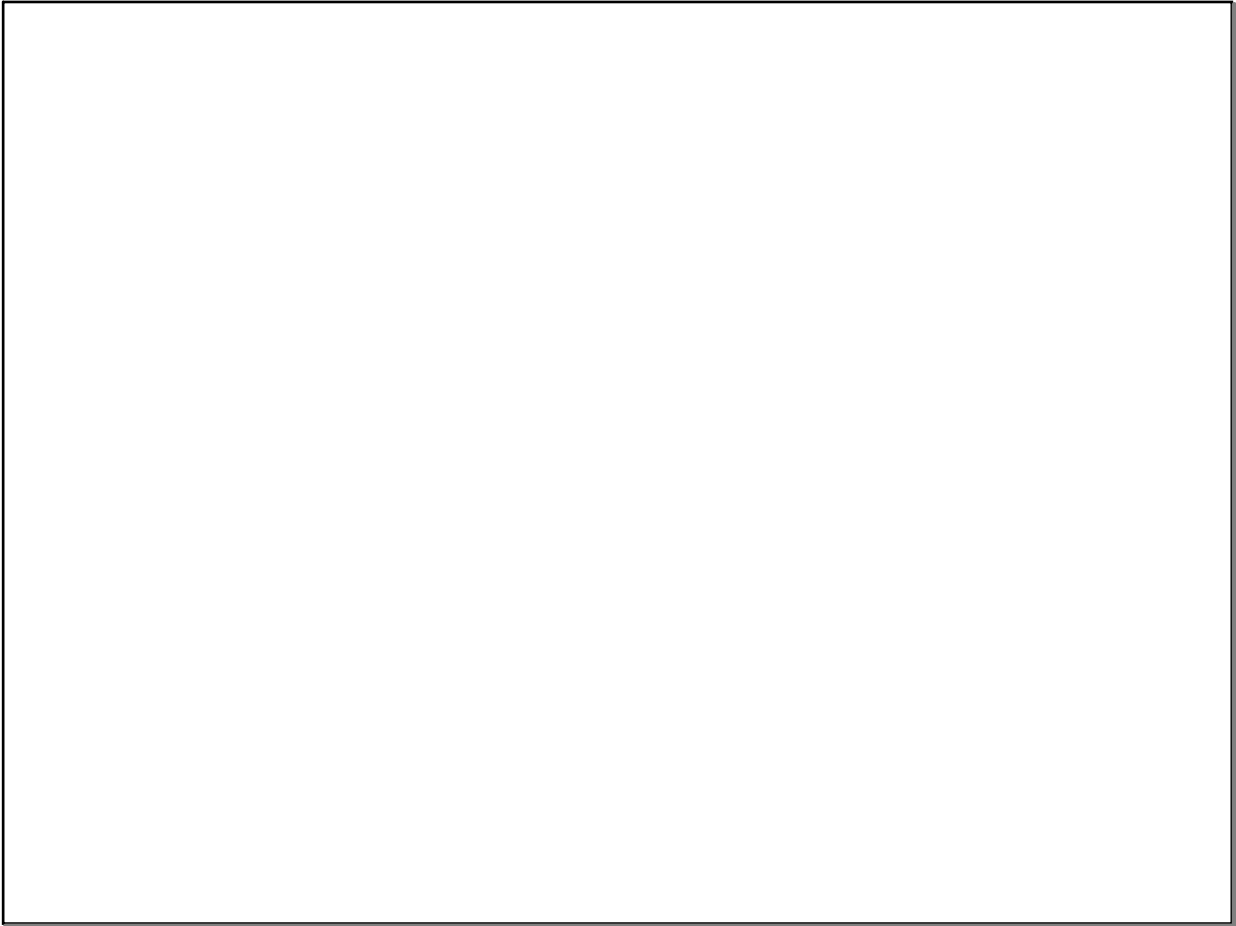
$$y = -2(x-1)(x-4)$$

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

$$y = -2x^2 + 10x - 8$$



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