

Converting between the Forms (1)

#19

Converting between the Forms (1)

Quadratic functions can be written in 3 different forms:

Standard Form:

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

Vertex Form:

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

Intercept Form:

$$y = a(x-p)(x-q)$$

Converting from Intercept Form to Standard Form

$$y = a(x-p)(x-q) \rightarrow y = ax^2 + bx + c$$

Steps:

Multiply the binomials & then multiply by "a".

CONCEPT 11-12

I CAN convert a quadratic in vertex or intercept form to standard form.

Today, we will discuss how to convert a quadratic function...

from Intercept Form to Standard Form

&

from Vertex Form to Standard Form

Ex. 1 $y = (x+4)(x-1)$
 $y = x^2 + 4x - 1x - 4$
 $y = x^2 + 3x - 4$

Converting between the Forms (1)

Ex. 2 $y = -3(x+5)(x+2)$
 $y = -3(x^2 + 2x + 5x + 10)$
 $y = -3(x^2 + 7x + 10)$
 $y = -3x^2 - 21x - 30$

Ex. 3 $y = 7(x-5)(x-6)$
Try this example on your own!
 $y = 7(x^2 - 6x - 5x + 30)$
 $y = 7(x^2 - 11x + 30)$
 $y = 7x^2 - 77x + 210$

Ex. 4 $y = -(x+2)(x-5)$
Try this example on your own!
 $y = -(x^2 - 5x + 2x - 10)$
 $y = -(x^2 - 3x - 10)$
 $y = -x^2 + 3x + 10$

Converting from **Vertex Form** to **Standard Form**

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

Steps:

Square the binomial, distribute the "a", & then combine like terms.

Ex. 5 $y = 2(x+1)^2 - 3$
 $y = 2(x+1)(x+1) - 3$
 $y = 2(x^2 + x + x + 1) - 3$
 $y = 2x^2 + 2x + 2x + 2 - 3$
 $y = 2x^2 + 4x - 1$

Ex. 6 $y = -(x+3)^2 + 1$
 $y = -(x+3)(x+3) + 1$
 $y = -(x^2 + 3x + 3x + 9) + 1$
 $y = -(x^2 + 6x + 9) + 1$
 $y = -x^2 - 6x - 9 + 1$
 $y = -x^2 - 6x - 8$

Converting between the Forms (1)

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

Try this
example
on your
own!

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

$$y = -2(x^2 + 4x + 4x + 16) - 3$$

$$y = -2(x^2 + 8x + 16) - 3$$

$$y = -2x^2 - 16x - 32 - 3$$

$$y = -2x^2 - 16x - 35$$

Ex. 8 $y = 4(x-3)^2 + 12$

Try this
example
on your
own!

$$y = 4(x-3)(x-3) + 12$$

$$y = 4(x^2 - 3x - 3x + 9) + 12$$

$$y = 4(x^2 - 6x + 9) + 12$$

$$y = 4x^2 - 24x + 36 + 12$$

$$y = 4x^2 - 24x + 48$$

HOMEWORK:

#20

Converting between the
Forms (1) Practice