Converting Between Vertex and Standard Form

Converting From Standard Form to Vertex Form

1) Identify a, b, and c from the equation

2) Find the x-value of the vertex by using $x = \frac{-b}{2a}$

3) Find the y-value of the vertex by plugging in the x-value from step #2

4) Plug a (from original equation), h (the x-value of vertex), and k (the y-value of the vertex) into vertex form

1) $y = x^2 + 12x + 32$

2) $f(x) = x^2 - 8x - 9$

3) $f(x) = x^2 + 10x - 3$

4) $y = x^2 - 6x + 15$

Converting from Vertex Form to Standard Form

1) Re-write the binomial squared as the product of a binomial multiplied by itself

2) Use the distributive property to multiply

3) Distribute the coefficient, if there is one

4) Combine like terms

1) $f(x) = 2(x - 5)^2 + 8$

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

3) $y = \frac{3}{2}(x - 6)^2 - 2$

4) $f(x) = -0.75(x + 16)^2 - 12$

Converting Between Forms Practice

Part One: Convert from standard form to vertex form.

1) $y = x^2 - 8x + 15$

2) $y = x^2 - 4x$

3) $y = 2x^2 + 12x + 7$

4) $y = 2x^2 - 8x + 17$

Part Two: Convert from vertex form to standard form.

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

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

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

8) $y = \frac{1}{2}(x + 8)^2 + 6$