

ALGEBRA 1: VERTEX FORM AND COMPLETING THE SQUARE

Lesson 2: Vertex Form by Completing the Square

In this lesson, you will learn how to convert a quadratic equation from standard form to vertex form by completing the square. This method is useful for finding the vertex of a parabola and for graphing it.

A quadratic equation in standard form is $y = ax^2 + bx + c$.

$$y = 2x^2 - 12x + 17$$

$$y = 2(x^2 - 6x) + 17$$

To complete the square, we need to add and subtract the same value inside the parentheses. This value is $\left(\frac{b}{2}\right)^2$.

$$y = 2(x^2 - 6x + 9) + 17$$

Now, we can write the equation in vertex form.

$$y = 2(x - 3)^2 + 5$$

Now, we can find the vertex of the parabola. The vertex is $(3, 5)$.

$$y = 2(x - 3)^2 + 5$$

Now, we can graph the parabola. The vertex is $(3, 5)$.

$$y = 2(x - 3)^2 + 5$$

Now, we can find the x-intercepts of the parabola. The x-intercepts are $(1, 0)$ and $(5, 0)$.

$$y = 2(x - 3)^2 + 5$$

Now, we can find the y-intercept of the parabola. The y-intercept is $(0, 17)$.

$$y = 2(x - 3)^2 + 5$$

CHAPTER 10, LESSON 2

