

Writing a Quadratic Equation in Vertex Form

57

1. Write the original function.
2. Working with the $(x^2 + bx)$ part, factor out "a" and prepare to complete the square.
3. Add the appropriate number to complete the square.
4. Write the PST as a binomial squared.
5. Solve for y. Identify the vertex.

$$y = x^2 - 4x - 1$$

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

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

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

$$\text{vertex: } (2, -5)$$

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Write $y = 5x^2 + 10x + 7$ in vertex form. Identify the vertex.

$$y = 5x^2 + 10x + 7$$

$$y = (5x^2 + 10x) + 7$$

$$y = 5(x^2 + 2x) + 7$$

$$y = 5(x^2 + 2x + 1) + 7 - 5$$

$$y = 5(x + 1)^2 + 2$$

$$\text{vertex: } (-1, 2)$$

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$$47.) \quad y = 2x^2 + 24x + 25$$

$$y = (2x^2 + 24x) + 25$$

$$y = 2(x^2 + 12x) + 25$$

$$y = 2(x^2 + 12x + 36) + 25 - 72$$

$$y = 2(x + 6)^2 - 47$$

$$\text{vertex: } (-6, -47)$$

P.288 / #35 - 38, 41 - 51, 62 - 66

due Monday

(#64, #66)

I will do tomorrow