

Standard Form

$$ax^2 + bx + c = 0$$

Y-intercept = c



Vertex Form

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

Vertex: (h, k)

① $x^2 + 4x + 3$

② $x^2 + 4x + 3 + 1 - 1$

③ $x^2 + 4x + 4 - 1$

$(x + 2)^2 - 1$

④ Vertex: $(-2, -1)$

- ① Divide b by 2, square the answer. How far is the answer from c ?

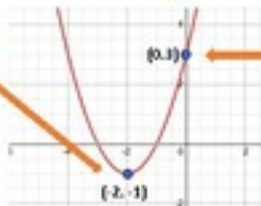
$$\frac{4}{2} = 2 \quad 2^2 = 4$$

- ② Add and subtract the difference to keep the value the same.

$$4 - 3 = 1$$

- ③ Combine like terms to get a perfect square. Rewrite the perfect square as a squared expression.

- ④ Identify the vertex of the parabola.



Y-intercept: $(0, 3)$