

Completing the square.

Complete the square to rewrite each quadratic equation in vertex form. Identify the vertex.

1. $y = x^2 + 10x + 32$

$$y = (x^2 + 10x) + 32$$

$$y = (x^2 + 10x + (5)^2) + 32 - (5)^2$$

$$y = (x^2 + 10x + (5)^2) + 32 - 25$$

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

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

Vertex: $(-5, 7)$

2. $y = x^2 - 8x + 3$

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

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

$$y = (x^2 - 8x + (-4)^2) + 3 - 16$$

$$y = (x^2 - 8x + (-4)^2) - 13$$

$$y = (x - 4)^2 - 13$$

Vertex: $(4, -13)$

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

Created with Doceri

