

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

vertex: (h, k)

point: $(-2, 15)$

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

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

$$-15 = a(-2-1)^2 + 3$$

$$-15 = a(-3)^2 + 3$$

$$-3 - 15 = 9a + 3 - 3$$

$$\frac{-18}{9} = \frac{9a}{9}$$

$$a = -2$$