

1.
Given Vertex (h, k) $(-2, -3)$
point $= (-6, -2)$

Vertex form of a parabola $f(x) = a(x-h)^2 + k$

$$h = -2, k = -3$$

$$f(x) = a(x - (-2))^2 + (-3)$$

$$f(x) = a(x+2)^2 - 3$$

given $(x, y) = (-6, -2)$ substitute into the above eqn.

$$-2 = a(-6+2)^2 - 3$$

$$-2 = a(-4)^2 - 3$$

$$-2 = a \times 16 - 3$$

$$a \times 16 = -2 + 3$$

$$16a = 1$$

$$a = \frac{1}{16}$$

Therefore eqn of the parabola is $y = \frac{1}{16}(x+2)^2 - 3$