

$$\textcircled{8} \quad y = (x+5)(x+4)$$

$$y = x^2 + 9x + 20$$

$$y = \left( x^2 + 9x + \left( \frac{9}{2} \right)^2 \right) + 20 + \frac{80}{4} - \frac{81}{4}$$

$$y = \left( x + \frac{9}{2} \right)^2 - \frac{1}{4}$$

$$\textcircled{9} \quad \frac{1}{2}(y+4) = (x-7)^2$$

$$\frac{2}{1} \left( \frac{1}{2}(y+4) \right) = 2(x-7)^2$$

$$y+4 = 2(x-7)^2$$

$$y = 2(x-7)^2 - 4$$

$$(11.) \quad 162x + 731 = -y - 9x^2$$

$$\begin{array}{c} (+y) \quad (+y) \\ \curvearrowright \quad \curvearrowright \end{array}$$

$$y = (-9x^2 - 162x) - 731$$

$$y = -9\left(x^2 + 18x + \frac{9^2}{9}\right) - 731 + \underline{729}$$

$$y = -9(x + 9)^2 - 2$$

$$y = a(x-p)(x-q)$$

where  $p, q$  are  
 $x$ -intercepts (zeros)

axis of symmetry (aos)

$$\frac{p+q}{2}$$

$$\textcircled{1.} \quad y = \frac{1}{2}(x+4)(x-2)$$

$$a = \frac{1}{2}$$

$$p = -4$$

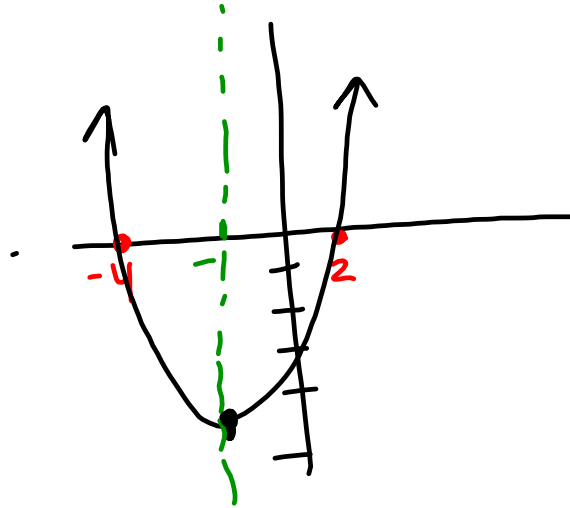
$$q = 2$$

$$aOS = -1$$

$$-\frac{4+2}{2} = -1$$

$$\text{Vertex } \left(-1, \frac{-9}{2}\right)$$

$$\begin{aligned} y &= \frac{1}{2}(-1+4)(-1-2) \\ &= \frac{1}{2}(3)(-3) \\ &= \frac{-9}{2} \end{aligned}$$



$$\textcircled{2.} \quad y = -\frac{1}{2}x(x-8)$$

$$y = -\frac{1}{2}(x-0)(x-8)$$

(EX) Find the vertex form of the equation of the parabola given vertex  $(1, -2)$  and passes through point  $(3, 6)$

We know:

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

Find:

$h, k, a$

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

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

$$6 = a(3-1)^2 - 2$$

$$6 = 4a - 2$$

$$8 = 4a$$

$$2 = a$$

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