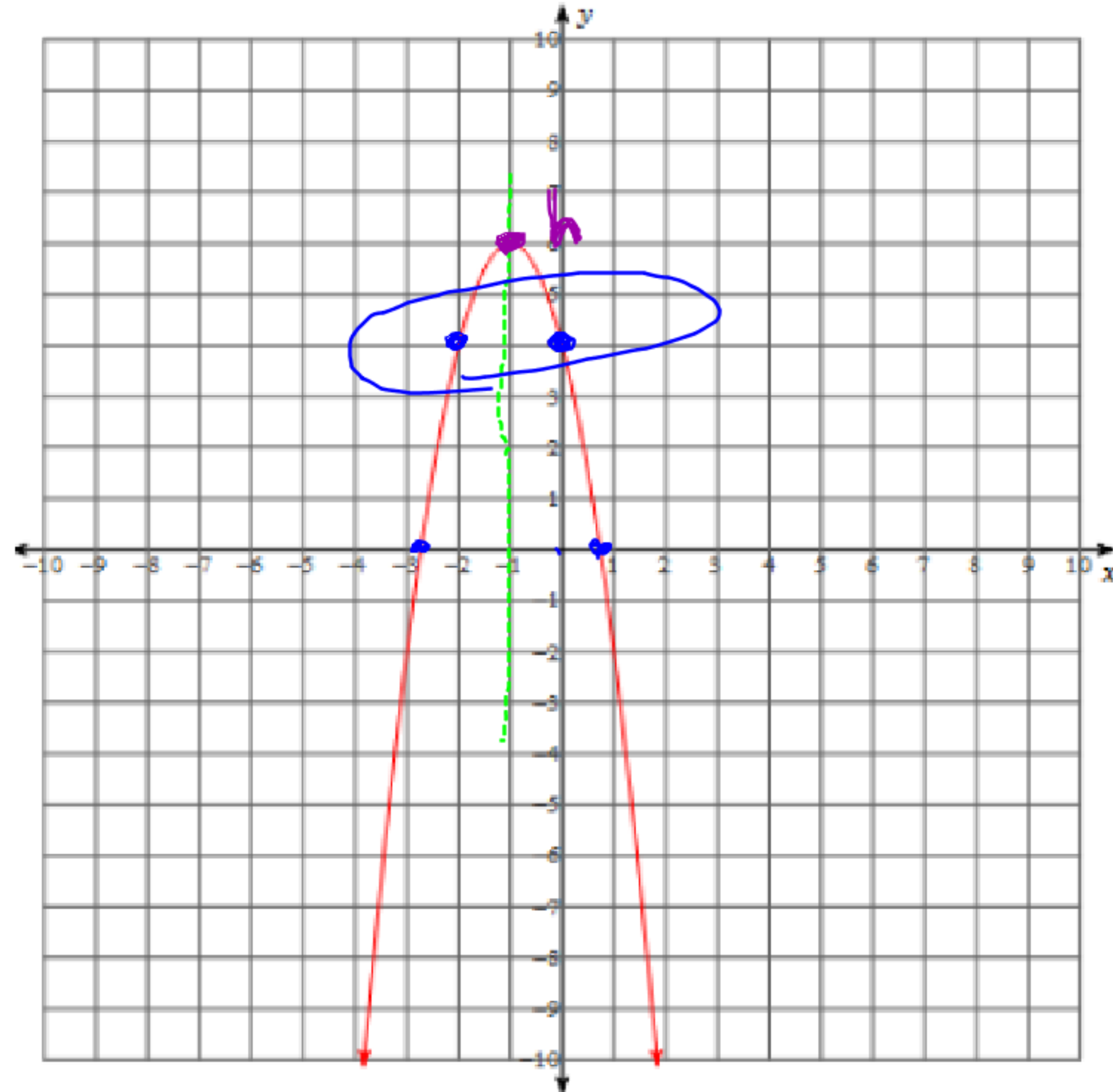


3.2 Finding Maximum and Minimums of Quadratic Fns

Partial Factoring

$$y\text{-int, } x=0$$



$$f(x) = \underbrace{+2x^2 + 8x}_{=0} - 19$$

$$y\text{-int} = -19$$

$$f(x) = 2x(x+4) - 19$$

$\uparrow \quad \quad \uparrow$
 $x=0 \quad x=-4$

$$h = \frac{0 - 4}{2} = -2$$

$$f(-2) = 2(-2)^2 + 8(-2) - 19 = -27 = k$$

vertex (h, k)

min at $(-2, -27)$

$$f(x) = \underbrace{-3x^2 + 15x + 1}$$

$$f(x) = -3x(x-5) + 1$$

$\downarrow$ $x=0$ $\downarrow$ $x=5$

$$h = \frac{0+5}{2} = 2.5$$

max of (2.5, 19.75)

$$\begin{aligned} f(2.5) &= -3(2.5)^2 + 15(2.5) + 1 \\ &= 19.75 = k \end{aligned}$$

$$f(x) = -0.26x^2 - 3.89x + 4.28$$

$$f(x) = -0.26x(x + 14.96) + 4.28$$

$$x=0$$

$$x = -14.96$$

$$h = \frac{-14.96}{2} = -7.48$$

$$f(-7.48) = -0.26(-7.48)^2 - 3.89(-7.48) + 4.28$$

$$f(-7.48) = \underline{18.83} = K$$

$$\max(-7.48, 18.83)$$