

$$25) y = -\frac{1}{6}x^2 - x - 3 \quad a = -\frac{1}{6} \quad b = -1 \quad c = -3$$

$$\text{Vertex} \rightarrow (-3, -1.5) \quad \text{AoS} \quad x = \frac{-b}{2a} \quad x = -3$$

$$y = -\frac{1}{6}(-3)^2 - (-3) - 3$$
$$= -\frac{1}{6}(9) + 3 - 3$$

$$x = \frac{-(-1)}{2(-\frac{1}{6})} = -\frac{1}{3}$$

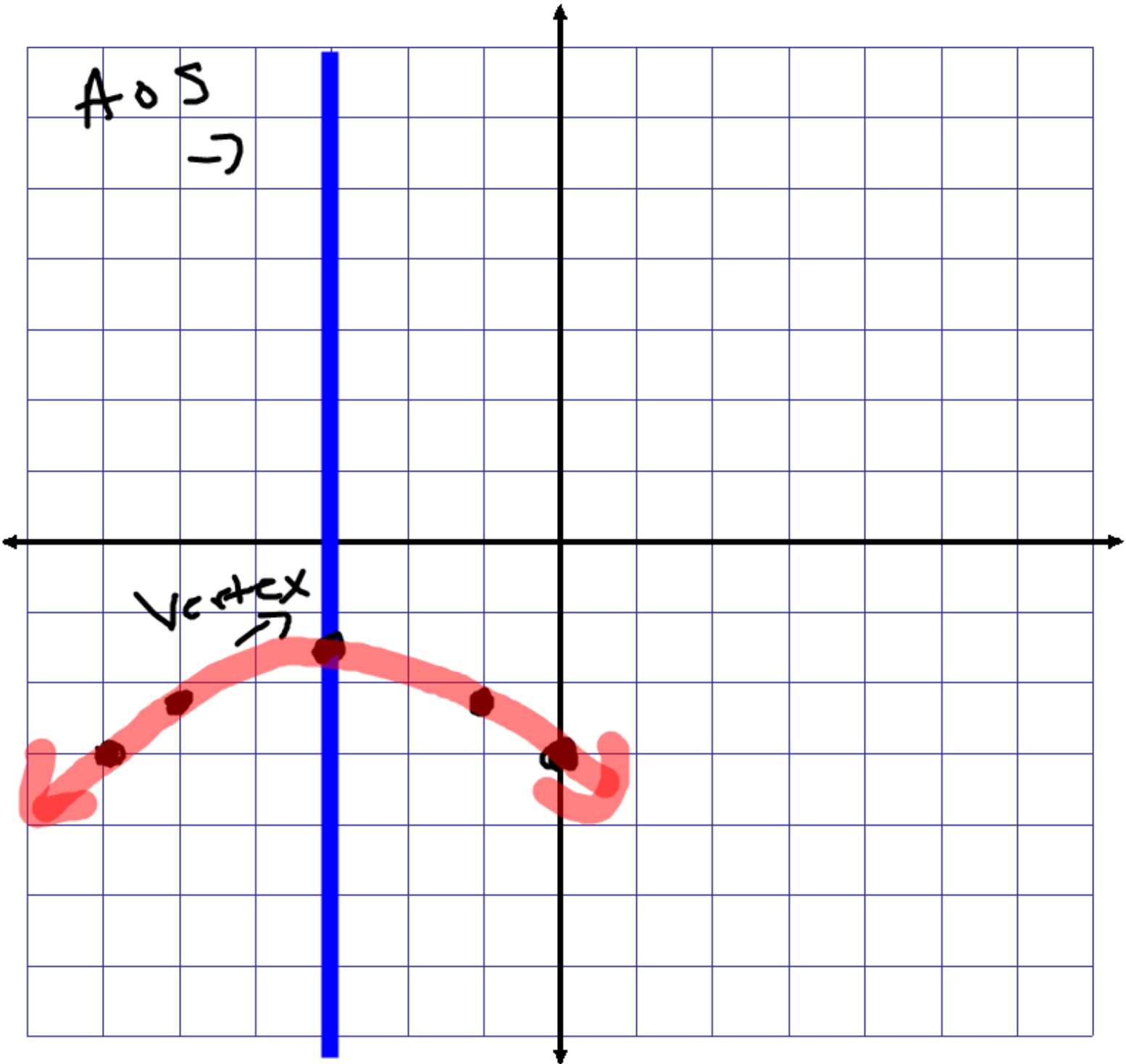
$$y = -1.5$$

$$x = -1 \rightarrow (-1, -2\frac{1}{6})$$

$$y\text{-Int} \rightarrow (0, c)$$
$$\rightarrow (0, -3)$$

$$y = -\frac{1}{6}(-1)^2 - (-1) - 3$$

$$= -\frac{1}{6} + 1 - 3 = -2\frac{1}{6}$$



AoS
→

Vertex
→

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

Intercept method

$$y = -\frac{1}{2}(x-4)(x-2)$$

1) x-Intercepts $\rightarrow (p, 0)$

$$(4, 0) \quad (2, 0) \quad (q, 0)$$

2) Axis of symmetry $\rightarrow \frac{p+q}{2}$

$$x = \frac{4+2}{2} = \frac{6}{2} = 3 \quad x=3$$

3) Vertex $x=3 \rightarrow (3, \frac{1}{2})$

$$y = -\frac{1}{2}(x-4)(x-2)$$

$$= -\frac{1}{2}(3-4)(3-2)$$

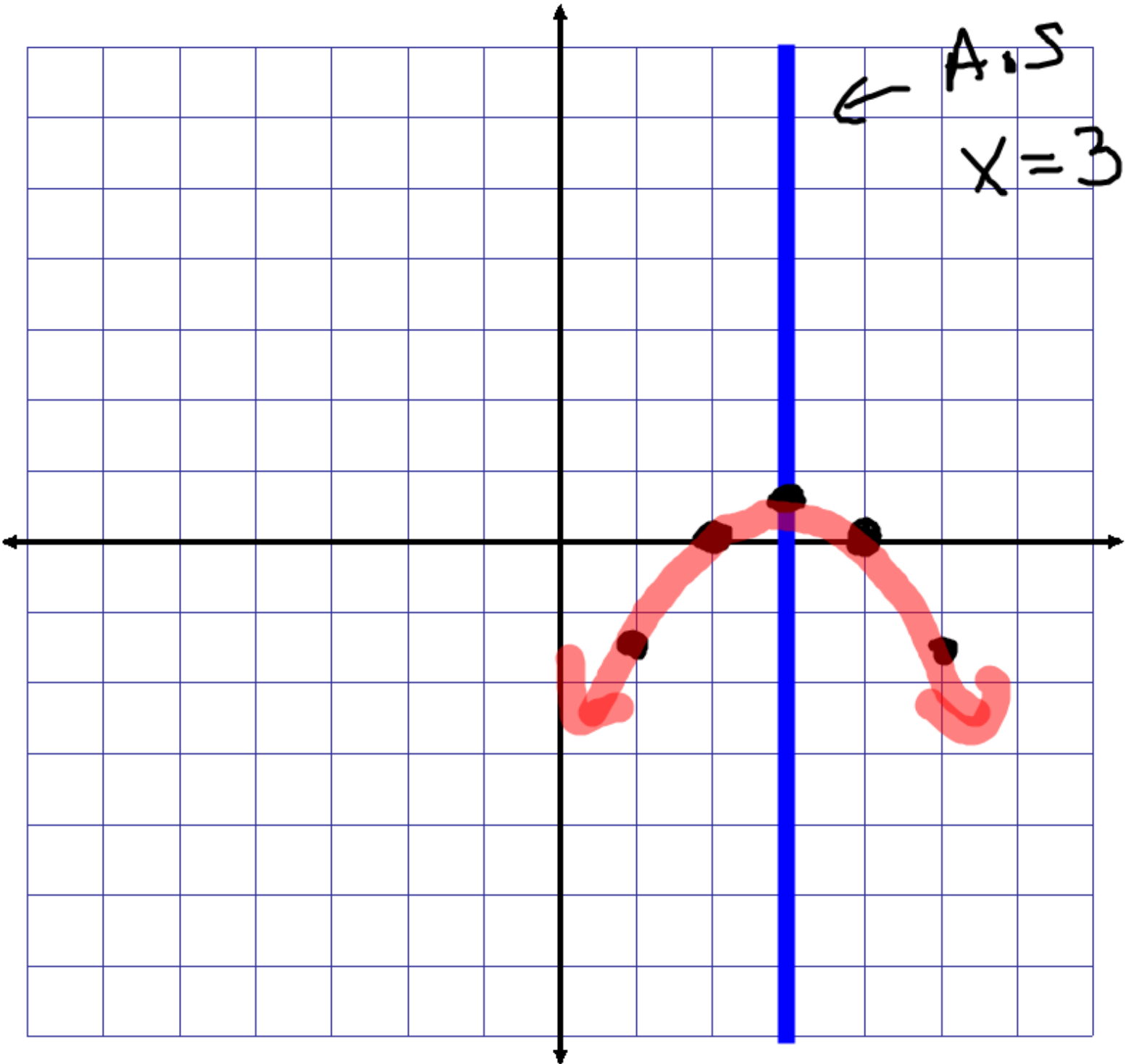
$$= -\frac{1}{2}(-1)(1) = \frac{1}{2}$$

4) find another point

$$x=1 \rightarrow (1, -1.5)$$

$$y = -\frac{1}{2}(1-4)(1-2)$$

$$= -\frac{1}{2}(-3)(-1) = -\frac{3}{2}$$



Intercept form $\rightarrow y = a(x-p)(x-q)$

1) Find p and q...(hint they will always be the opposite sign of what is in the problem)

2) Find the x-intercepts (p, 0) and (q, 0)

3) Find the Axis of Symmetry $\rightarrow x = \frac{p+q}{2}$

4) Find the Vertex

5) Find a second point on one side of the axis of symmetry

6) Mirror the point over the axis of symmetry

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GRAPHING WITH INTERCEPT FORM Graph the quadratic function. Label the vertex, axis of symmetry, and x-intercepts.

32. $y = (x - 2)(x - 6)$

33. $y = 4(x + 1)(x - 1)$

34. $y = -(x + 3)(x + 5)$

35. $y = \frac{1}{3}(x + 4)(x + 1)$

36. $y = -\frac{1}{2}(x - 3)(x + 2)$

37. $y = -3x(x - 2)$

37) $y = -3(x - 0)(x - 2)$