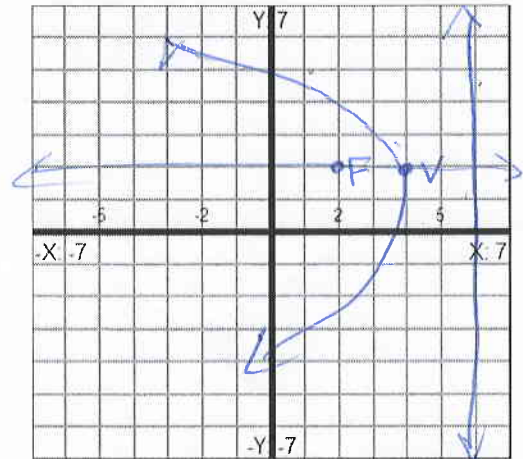


Instructions: Show all work. Answer each question as completely as possible. Use exact answers unless specifically asked to round.

- Find the equation of the parabola with a vertex at (4,2) and a focus at (2,2). Sketch the graph. Clearly label the vertex, the focus, the directrix, the axis of symmetry.

$a = 2$
 directrix: $x = 6$
 opens left
 $(y - 2)^2 = -8(x - 4)$
 axis of symmetry $y = 2$



$x = 6$
directrix

- Sketch the graph of the ellipse with the general form equation $4x^2 + 3y^2 + 8x - 6y - 5 = 0$. Find the equation in standard form and clearly state the following: the major axis, the minor axis, the vertices, endpoints of the minor axis, foci and center.

$$4(x^2 + 2x + 1) + 3(y^2 - 2y + 1) = 5 + 4 + 3$$

$$\frac{4(x+1)^2}{12} + \frac{3(y-1)^2}{12} = \frac{12}{12}$$

$$\frac{(x+1)^2}{3} + \frac{(y-1)^2}{4} = 1$$

$a = 2$
 $b = \sqrt{3}$
 $c = 1$
 center $(-1, 1)$
 vertices $(-1, 3)$ $(-1, -1)$
 minor axis endpoints $(-1 + \sqrt{3}, 1)$
 $(-1 - \sqrt{3}, 1)$
 major axis $x = -1$
 minor axis $y = 1$
 foci $(-1, 2)$ $(-1, 0)$

