

$$25y^2 - 16x^2 - 150y - 32x - 191 = 0$$

$$(25y^2 - 150y) - (16x^2 + 32x) = 191$$

$$25(y^2 - 6y + 9) - 16(x^2 + 2x + 1) = 191$$

+225 -16 +225 -16

$$\frac{25(y-3)^2}{16} - \frac{16(x+1)^2}{25} = \frac{400}{400}$$

$$\frac{(y-3)^2}{16} - \frac{(x+1)^2}{25} = 1$$

Center: $(-1, 3)$

$$a = \sqrt{16} = 4$$

$$b = \sqrt{25} = 5$$

Vertical (y is first)

Slopes

$$\pm \frac{a}{b} = \pm \frac{4}{5}$$

$$c^2 = a^2 + b^2$$

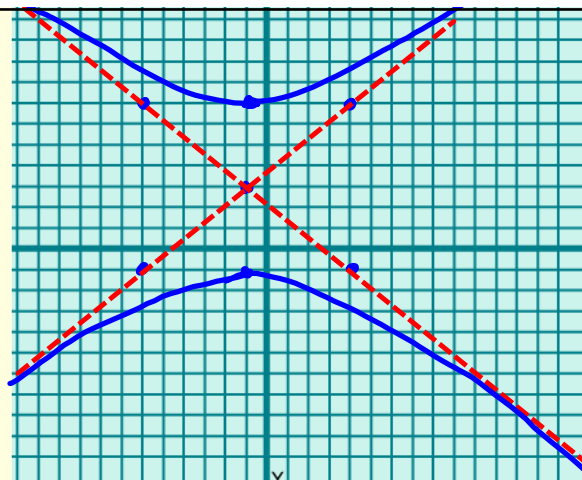
$$c^2 = 16 + 25$$

$$c^2 = 41$$

$$c = \sqrt{41}$$

Foci: $(-1, 3 \pm \sqrt{41})$

Vertices $(-1, 3 \pm 4) = \begin{pmatrix} -1, 7 \\ -1, -1 \end{pmatrix}$



To Graph:

- 1) Plot center
- 2) Plot asymptotes
- 3) Plot vertex
- 4) Draw curves toward asymptotes