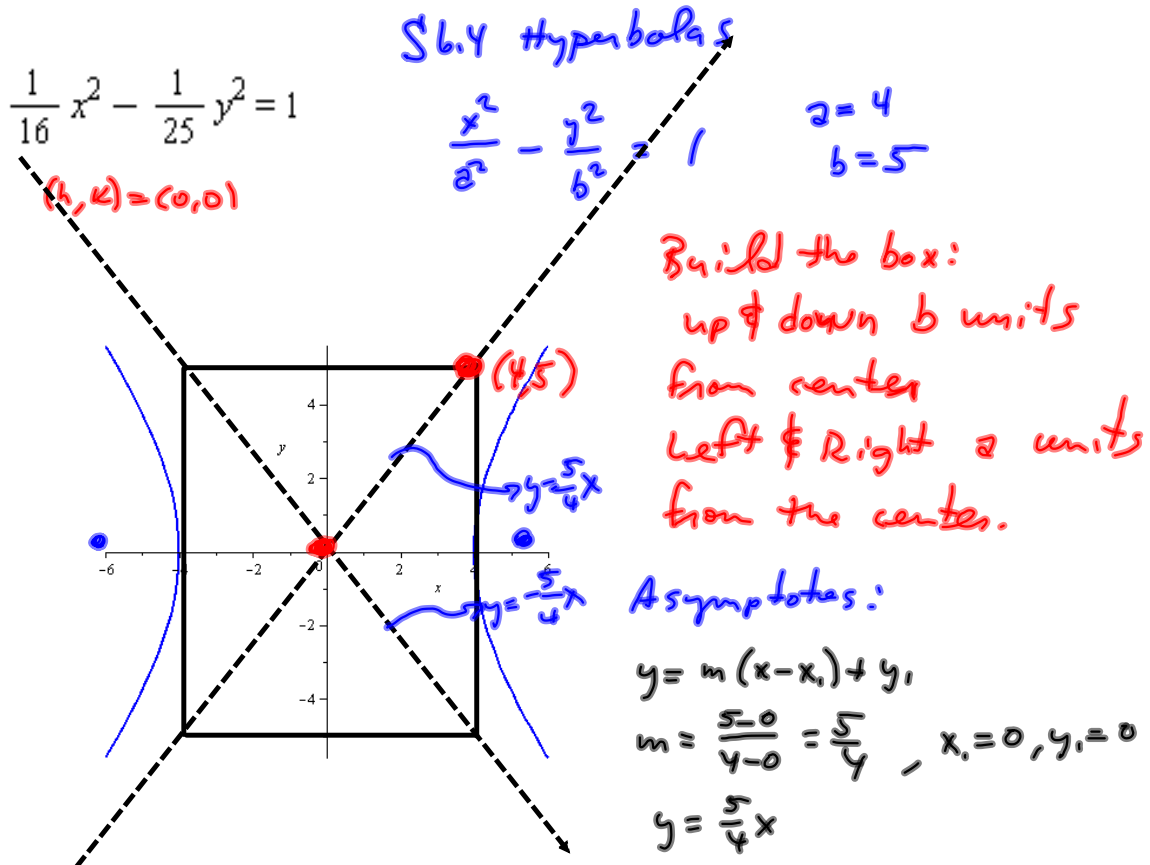


$$16x^2 - 32x + 25y^2 + 50y = -16$$

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

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

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



A hyperbola is the set of all points:

The difference of the distances from the point to the foci is constant.

Take the previous hyperbola, shift it right 2 & down 3.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y = m(x - x_1) + y_1$$

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$

$(h, k) = \text{center.}$

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

$$y = \frac{5}{4}(x-2) - 3 \quad (2, -3)$$

$$y = \frac{5}{4}(x-6) + 2 \quad (6, 2)$$

$$m = \frac{2 - (-3)}{6 - 2} = \frac{5}{4}$$

$$16 + 25 = 41 = c^2$$

$$c = \sqrt{41} \approx 6.403$$

$$2 - 6.403 = -4.403$$

$$2 + 6.403 = 8.403$$

c is the distance from center to the foci.

