

8. Given

$$V = (-2, 1) \quad V' = (-2, -5)$$

$$F = (-2, 4) \quad F' = (-2, -8)$$

center is $= (-2, -2)$ or $\bar{6}$

$$c = 6$$

$$a = 3$$

$$\text{Since } c^2 = a^2 + b^2$$

$$36 = 9 + b^2$$

$$b^2 = 27$$

$$b = \sqrt{27}$$

therefore equation of hyperbola is

$$\frac{(y+2)^2}{27} - \frac{(x+2)^2}{9} = 1$$

9. $25y^2 - 16x^2 = 400$

Divide the above equation by 400

$$\frac{y^2}{16} - \frac{x^2}{25} = 1$$

$$R, K = (0, 0)$$

$$b^2 = 16 \Rightarrow b = 4$$

$$a^2 = 25 \Rightarrow a = 5$$

$$\text{Vertex } (0, \pm b) \Rightarrow (0, -4), (0, 4)$$

$$\text{Center is } = (0, 0)$$

$$\text{Focus is } \Rightarrow (0, \pm c)$$

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

$$c = \sqrt{41}$$

$$\text{therefore focus } \Rightarrow (0, -\sqrt{41}), (0, \sqrt{41})$$

