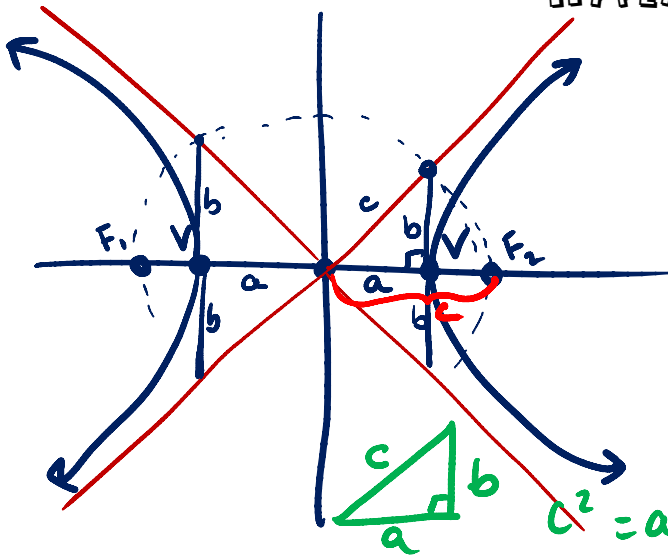


# CONIC SECTIONS: DAY 4

## HYPERBOLAS



$2a$  = transverse axis

dist from center to vertex

$2b$  = conjugate axis

⊥ from vertex to asymptote

$c$  = dist from center to focal point

slope of asymptotes =  $\pm \frac{b}{a}$

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

### Equations of a Hyperbola (Opening Left/Right)

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

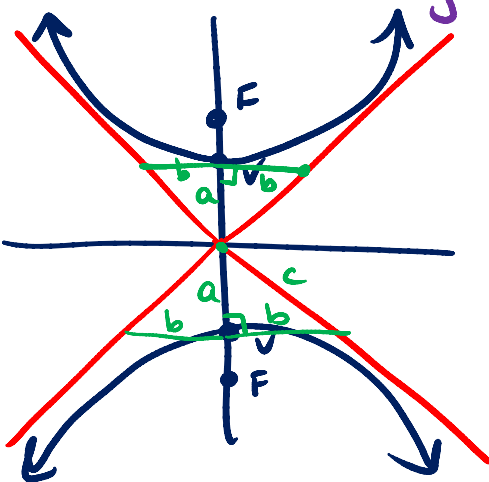
$a$  is in positive term  
 $b$  is in negative term

$(h, k)$  center

Parametric's

$$x = a \sec t + h$$

$$y = b \tan t + k$$



slope of asymptotes =  $\pm \frac{a}{b}$

### Equations of a Hyperbola (Opening Up/Down)

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

center  $(h, k)$

Parametric's

$$x = b \tan t + h$$

$$y = a \sec t + k$$