

# Day 5 Notes

Thursday, April 23, 2015 10:40 AM

Precalculus  
Conics - Hyperbolas - Day 1 Notes

Name:  
Period:

What is a **HYPERBOLA**?

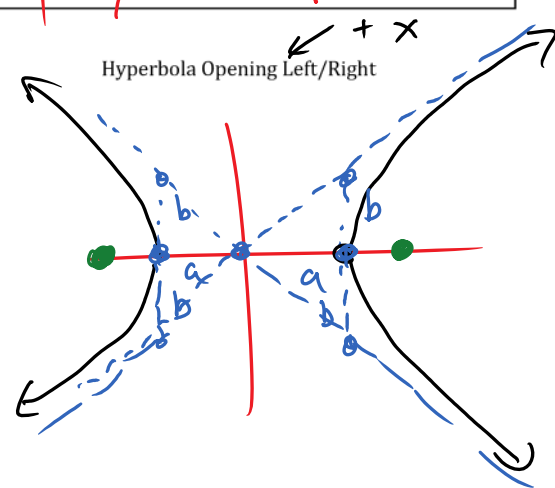
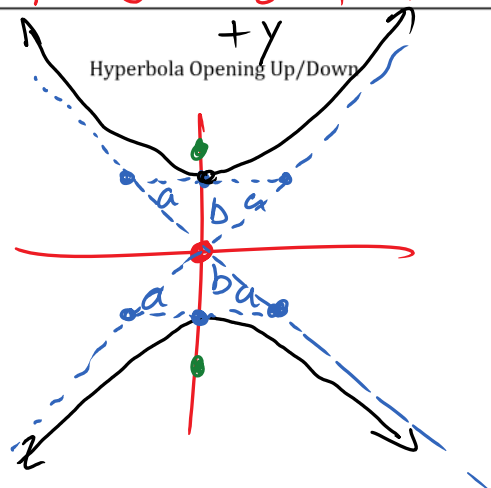
*open left/right*  
**EQUATION(S) OF A HYPERBOLA IN GENERAL FORM**  

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$
*open up/down*  

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

**EQUATION(S) OF A HYPERBOLA IN PARAMETRIC FORM**

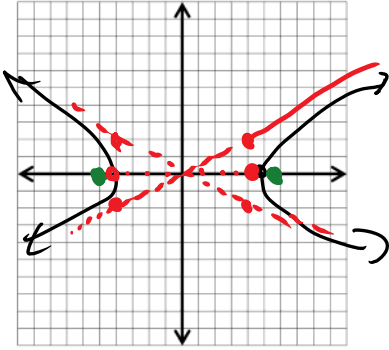
$x = a \sec \theta + h$		$x = a \tan t + h$
$y = b \tan t + k$		$y = b \sec t + k$



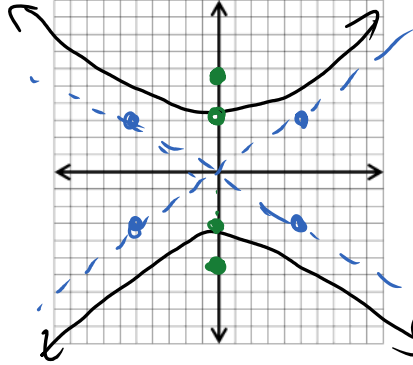
slope of asymptote  $\pm \frac{b}{a}$       **KEY FEATURES**

Foci  $F = \sqrt{a^2 + b^2}$       *up/down*  
 \* Distance from Center.       $2a$ : conjugate axis  
 $2b$ : Transverse axis

$$1. \frac{x^2}{16} - \frac{y^2}{4} = 1$$



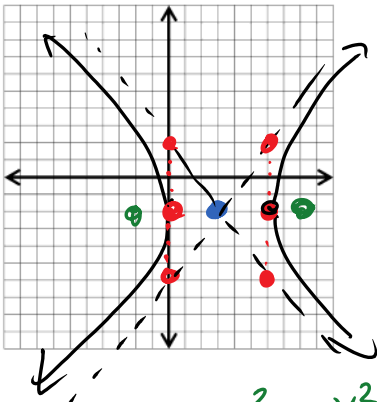
$$2. \frac{y^2}{9} - \frac{x^2}{25} = 1$$



$$F = \sqrt{34}$$

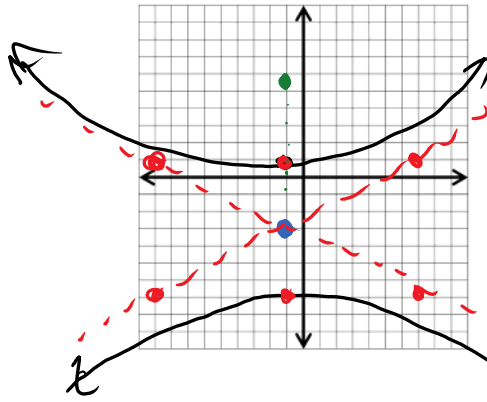
$$3. \frac{(x-3)^2}{9} - \frac{(y+2)^2}{16} = 1$$

$$\sqrt{25}$$



$$4. 4(y+3)^2 - (x+1)^2 = 64$$

$$\frac{(y+3)^2}{16} - \frac{(x+1)^2}{64} = 1$$



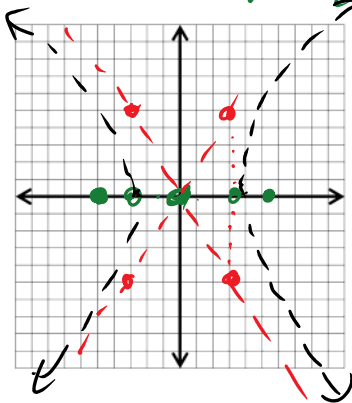
$$(-1, -3)$$

$$F = \sqrt{64+64}$$

$$F = \sqrt{80}$$

$$5. 25x^2 - 9y^2 = 225$$

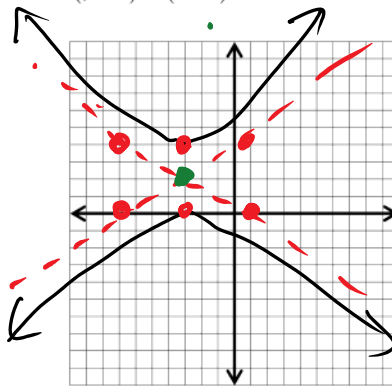
$$\frac{x^2}{9} - \frac{y^2}{25} = 1$$



$$\sqrt{9+25}$$

$$\sqrt{34}$$

$$6. 4(y-2)^2 - (x+3)^2 = 16$$



$$\frac{(y-2)^2}{4} - \frac{(x+3)^2}{16} = 1$$