

$$\frac{9x^2}{144} + \frac{16y^2}{144} = \frac{144}{144}$$

$$\frac{x^2}{16} + \frac{y^2}{9} = 1$$

$C(0,0)$

$$a=4$$

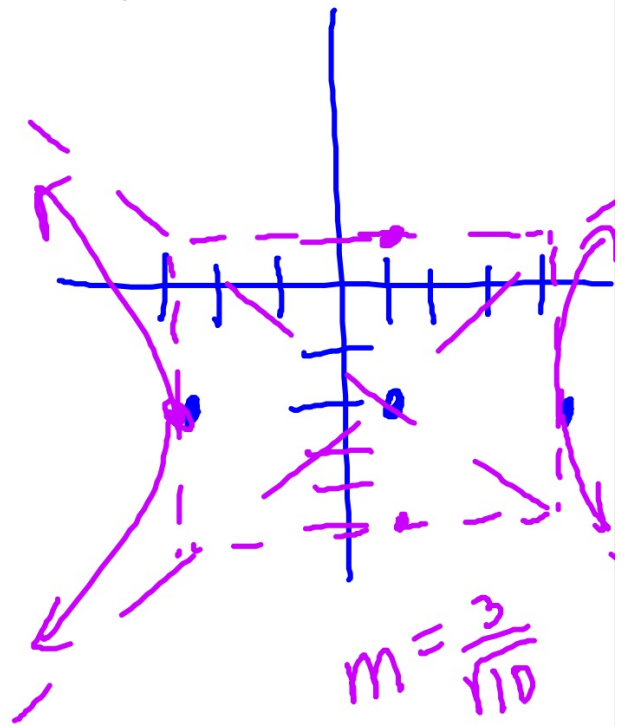
$$b=3$$

$$\frac{(x-1)^2}{10} - \frac{(y+2)^2}{9} = 1$$

$C(1, -2)$

$$a = \sqrt{10}$$

$$b = 3$$



## 8.4 Ellipses, 8.5 Hyperbolas - Day 2

### ALL YOU NEED IS

$$y = \frac{1}{x}$$



$$x^2 + y^2 = 9$$



$$y = |-2x|$$



$$x = -3|\sin y|$$



\*See printout.

## REVIEW

ex: Sketch. State the center, foci and asymptotes (if applicable).

$$\text{a) } \frac{(y+3)^2}{4} - \frac{(x-1)^2}{9} = 1$$

## REVIEW

ex: Sketch. State the center, foci and asymptotes (if applicable).

$$\text{b) } \frac{(x+2)^2}{16} + y^2 = 1$$

## Writing Equations

### Ellipse

NEED:

Center  
 $a^2, b^2$

### Hyperbola

NEED:

Center  
 $a^2, b^2$

## Writing Equations

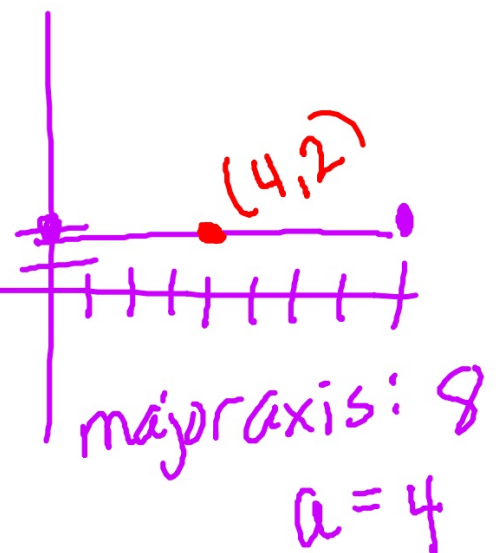
ex: Write the standard form equation of the conic section with the given characteristics.

a) ellipse

vertices:  $(0, 2)$  &  $(8, 2)$

minor axis length: 6 ;  $b=3$

$$\frac{(x-4)^2}{16} + \frac{(y-2)^2}{9} = 1$$



ex: Write the standard form equation of the conic section with the given characteristics.

b) ellipse

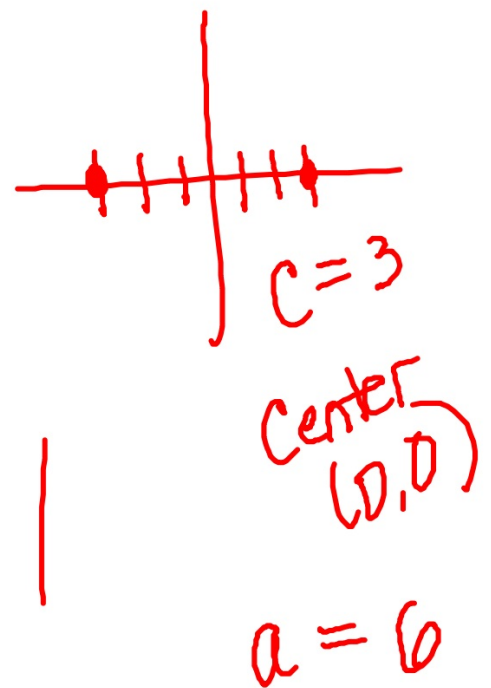
foci:  $(3, 0)$  &  $(-3, 0)$

major axis length: 12

$$\frac{x^2}{36} + \frac{y^2}{27} = 1$$

$$c^2 = a^2 - b^2$$

$$9 = 36 - b^2; b^2 = 27$$





ex: Write the standard form equation of the conic section with the given characteristics.

c) ellipse

vertices:  $(0, 5)$  &  $(0, -5)$

passes through the point  $(4, 2)$

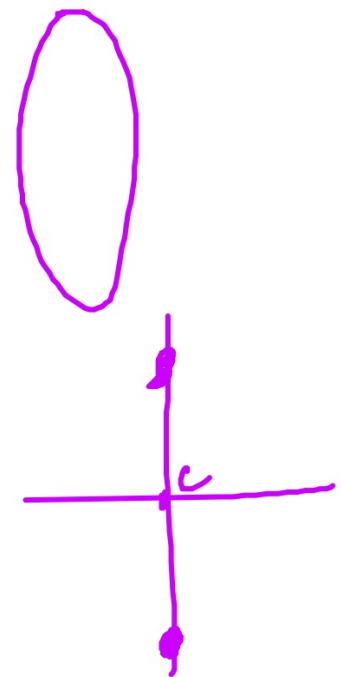
$$\frac{x^2}{\frac{400}{21}} + \frac{y^2}{25} = 1$$

$$\frac{16}{b^2} + \frac{4}{25} = 1$$

$$\frac{16}{b^2} = \frac{21}{25}$$

$$400 = 21b^2$$

$$b^2 = \frac{400}{21}$$



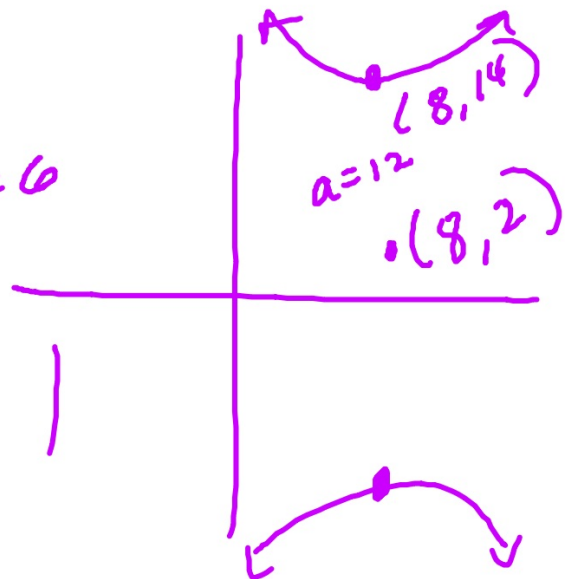
ex: Write the standard form equation of the conic section with the given characteristics.

d) hyperbola

vertices:  $(8, 14)$  &  $(8, -10)$

conjugate axis length: 12 ;  $b=6$

$$\frac{(y-2)^2}{144} - \frac{(x-8)^2}{36} = 1$$

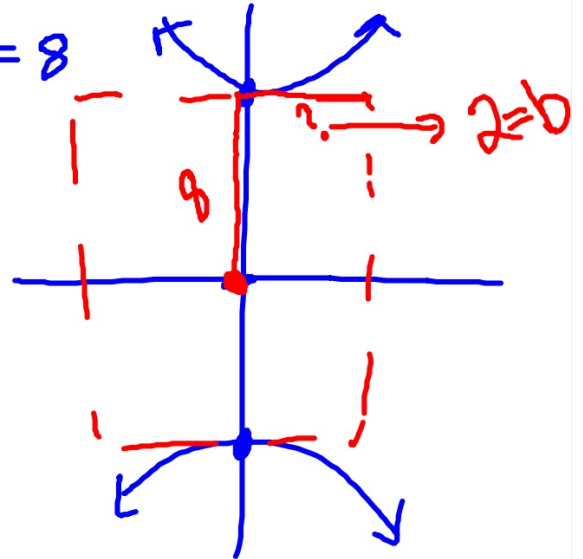


ex: Write the standard form equation of the conic section with the given characteristics.

e) hyperbola

$(0, 8)$  &  $(0, -8)$  Vertices  $a=8$   
asymptotes:  $y=4x, y=-4x$

$$\frac{y^2}{64} - \frac{x^2}{4} = 1$$



## REVIEW

ex: Write the standard form equation of the conic section with the given characteristics.

- f) circle  
center:  $(2, -5)$   
tangent to the x-axis

## REVIEW

ex: Write the standard form equation of the conic section with the given characteristics.

- g) parabola  
focus:  $(2, 3)$   
directrix:  $y=7$