

Day 2 on 9.3

Skip 44

Find the standard form of the equation.

Ex 1) Vertices: (4, 1) and (4, 9)

Foci: (4, 0) and (4, 10)

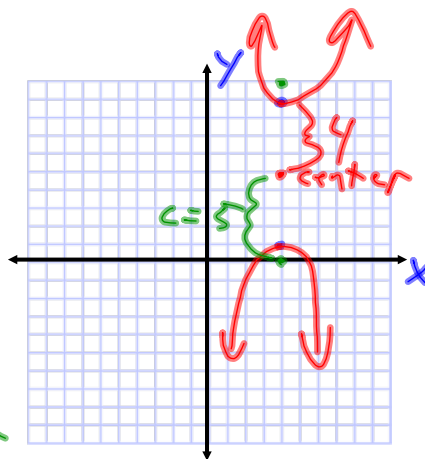
$$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$$

Center: (4, 5)

$a = 4$
 $a^2 = 16$

$c^2 = a^2 + b^2$
 $5^2 = 16 + b^2$
 $25 - 16 = b^2$
 $9 = b^2$

$$\frac{(y-5)^2}{16} - \frac{(x-4)^2}{9} = 1$$



Ex 2) Vertices: (2, 3) and (2, -3)
Passes through the point (0, 5)

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

Center: (2, 0)

$a = 3$
 $a^2 = 9$

$$\frac{(y-0)^2}{9} - \frac{(x-2)^2}{b^2} = 1$$

$$\frac{(5-0)^2}{9} - \frac{(0-2)^2}{b^2} = 1$$

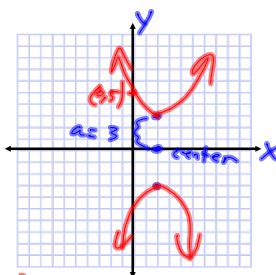
$$\frac{25}{9} - \frac{4}{b^2} = 1$$

$$1 - \frac{25}{9} = \frac{9}{9} - \frac{25}{9} = \frac{-16}{9}$$

$$\frac{-4}{b^2} = \frac{-16}{9}$$

$b^2 = \frac{36}{16}$
 $b^2 = \frac{9}{4}$

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



Classify the graph of the equation as a circle, a parabola, ellipse, or hyperbola.

Ex 3) $x^2 + y^2 - 6x + 4y + 9 = 0$

$$A = 1$$

$$C = 1$$

Circle