

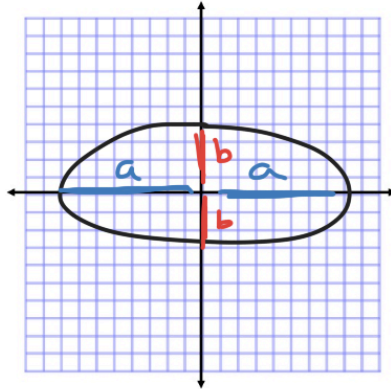
# Ellipses



$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

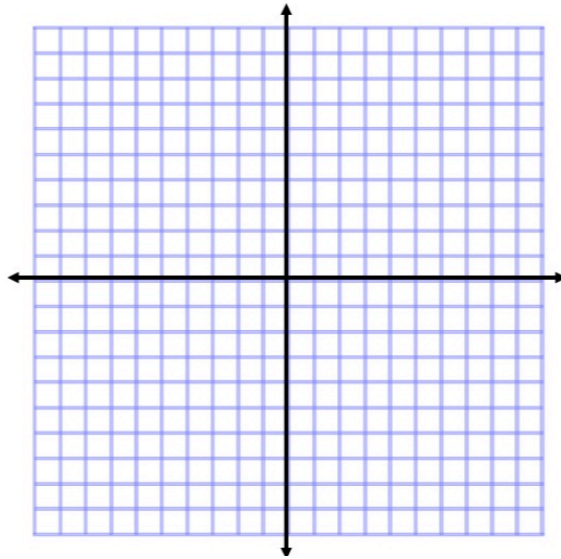
$\uparrow$   $a$ ,  
the  $x$ -  
radius

$\uparrow$   $b$ ,  
the  $y$ -  
radius



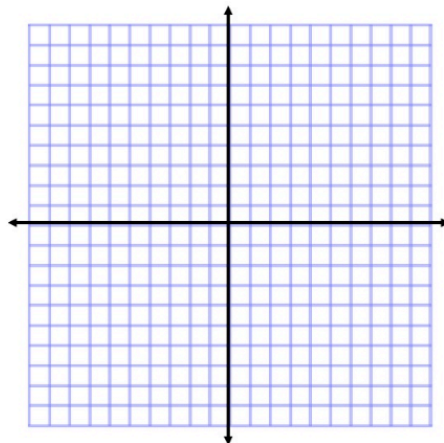
Longest axis — "major axis"  
shortest axis — "minor axis"

**Ex 1** Graph the Ellipse  $\frac{x^2}{9} + \frac{y^2}{25} = 1$



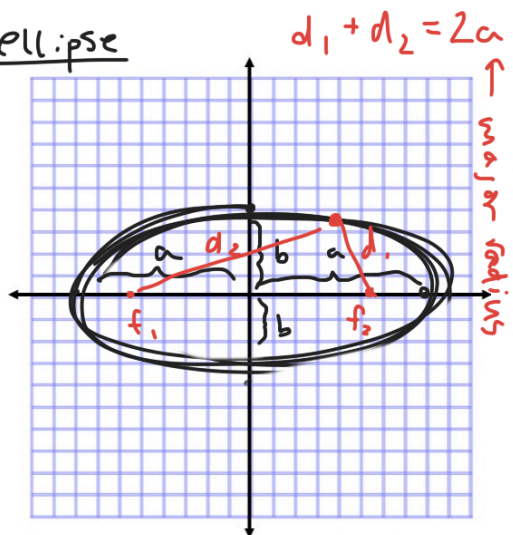
**Ex 2** Graph this  $yo.$

$$\frac{(x-5)^2}{9} + \frac{y^2}{25}$$



foci of an ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$



How to find foci

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

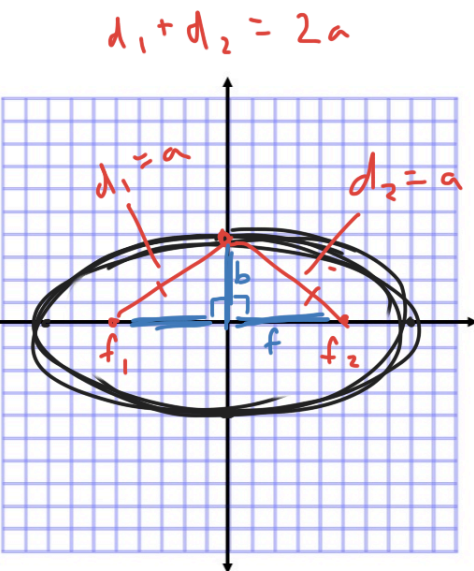
$$f^2 + b^2 = a^2$$

$$-b^2 - b^2$$

$$f^2 = a^2 - b^2$$

$$f = \sqrt{a^2 - b^2}$$

make sure you take "bigger - smaller"



**Ex 3** graph and plot foci

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

