PreCalculus 12 Date _____

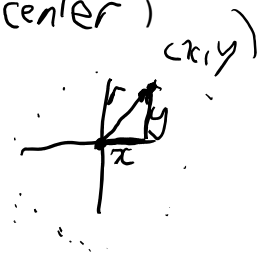
Unit 2: Conics
2.2 Circles & Ellipses

Circle:

set of infinite points all equidistant (radius) from a set location (center)

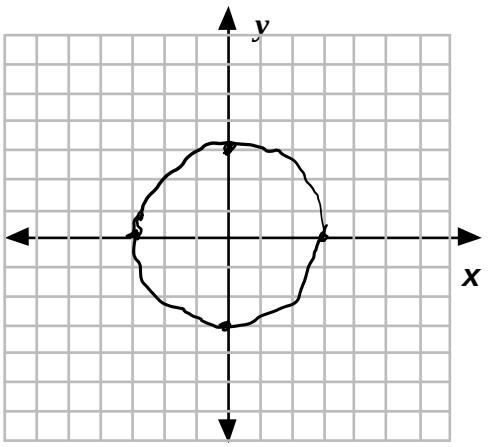
Use Pythagoras to write the standard equation of a circle:

$x^2+y^2=r^2$

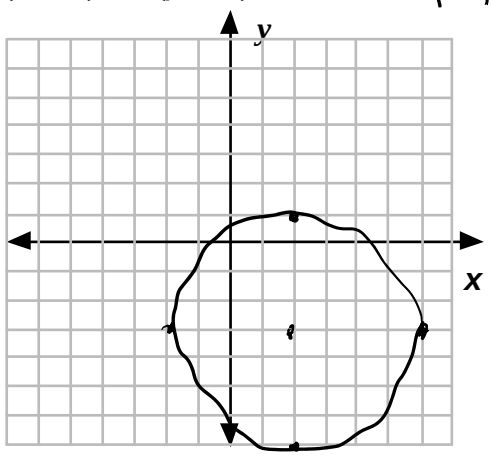


Ex. Graph each circle:

$x^2 + y^2 = 9$ (0,0) r=3



$(x-2)^2 + (y+3)^2 = 16$ (2,-3) r=4



Ellipse:

- An oval.
- A stretched unit (radius 1) circle.
- Has a major (longer) axis with end vertices and shorter (smaller) axis with co-vertices.
- Standard form $\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$ $\left(\frac{x-h}{a}\right)^2+\left(\frac{y-k}{b}\right)^2=1$

Ex. For each ellipse state the info asked for and graph:

$\frac{(x-3)^2}{25}+\frac{(y+2)^2}{4}=1$

Centre: (3, -2)

Vertices: (-2,-2) & (8,-2)

$9x^2+(y-1)^2=36$

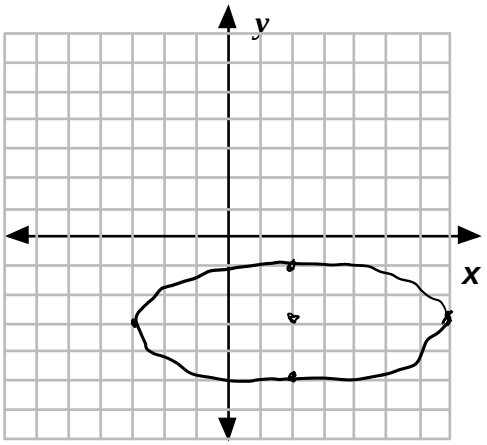
$\frac{9x^2}{36}+\frac{(y-1)^2}{36}=1$

$\frac{x^2}{4}+\frac{(y-1)^2}{36}=1$

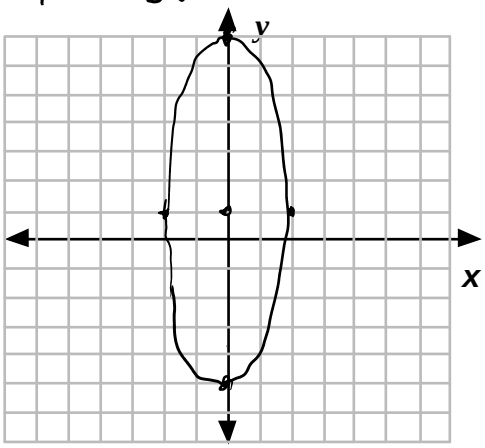
Centre: (0, 1)

Vertices: (0,7) & (0,-5)

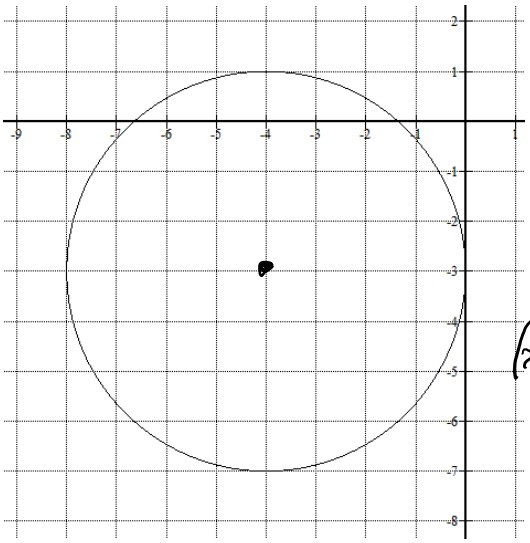
$\frac{(x-2)^2}{25} + \frac{(y+3)^2}{4} = 1$



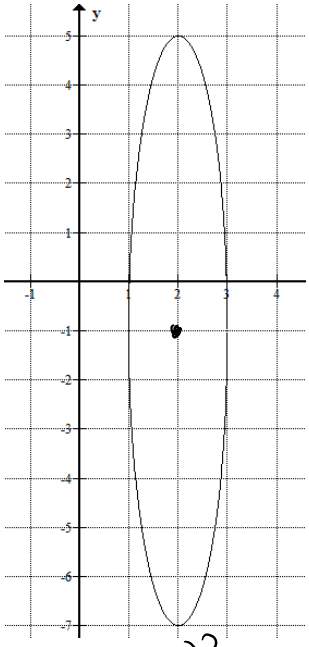
$\frac{x^2}{4} + \frac{(y-1)^2}{36} = 1$



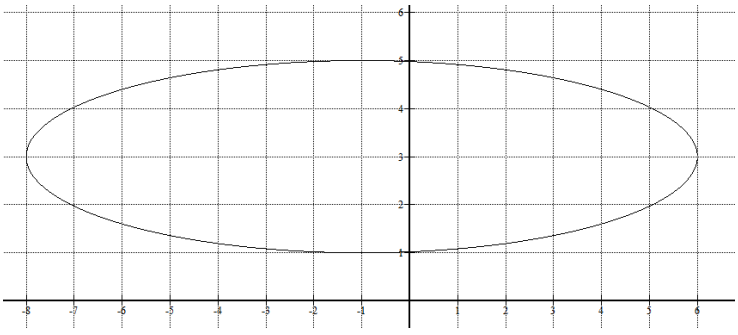
Ex. Write the equation of each circle/ellipse shown:



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



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



$\frac{(x+1)^2}{49} + \frac{(y-3)^2}{4} = 1$

Practice: worksheets