Pre-AP Precal

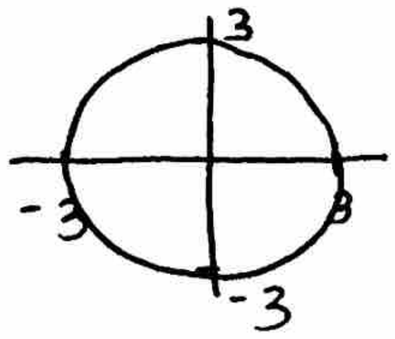
Circles and Ellipses

Name Key Date _____

Graph the circle and label the center and radius.

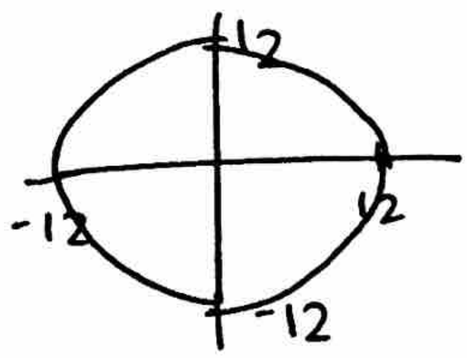
1. $x^2 + y^2 = 9$

center (0,0)
radius 3



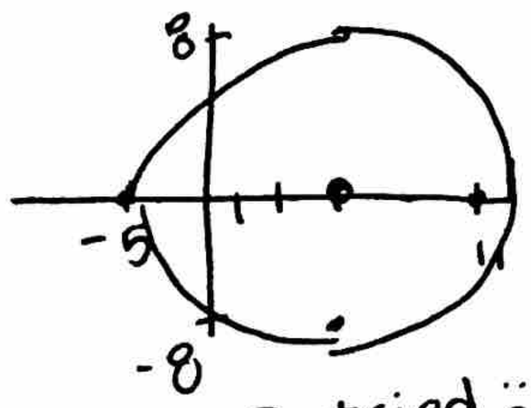
2. $x^2 + y^2 - 144 = 0$

$x^2+y^2=144$
center (0,0)
radius 12



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

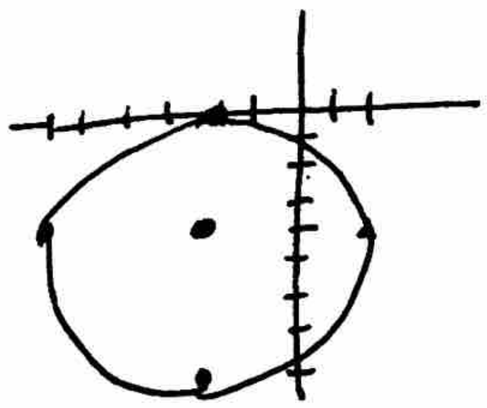
center (3,0)
radius 8



I tried :)

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

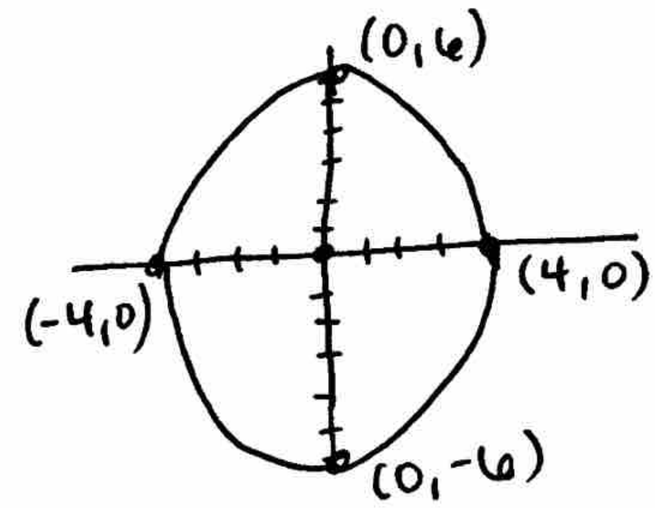
center (-2,-4)
radius 4



Graph each equation (label important features). Ellipses

5. $\frac{x^2}{16} + \frac{y^2}{36} = 1$

a=4
b=6
center (0,0)

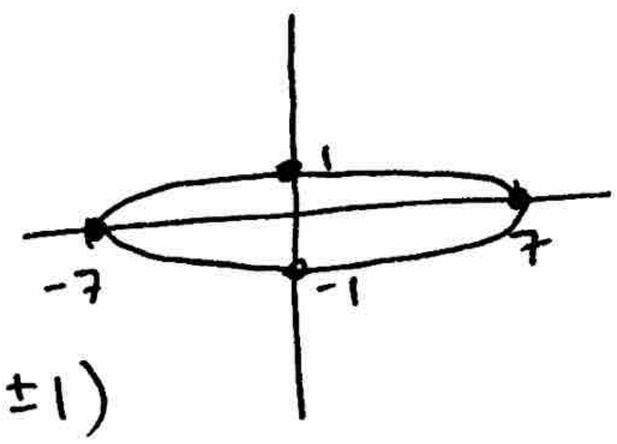


6. $\frac{x^2}{49} + y^2 = 1$

a=7 b=1

center (0,0)

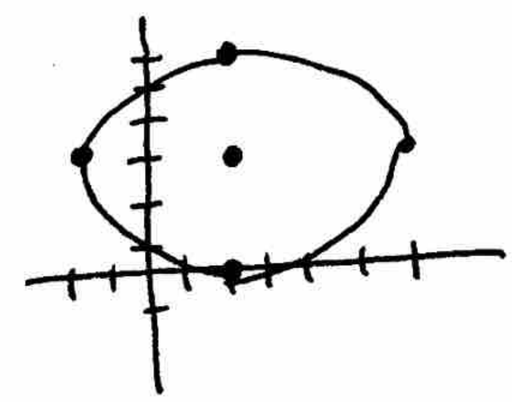
vertices
(±7,0) & (0,±1)



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

center (2,3)
a=4
b=3

vertices
(-2,3), (6,3), (2,0), (2,6)

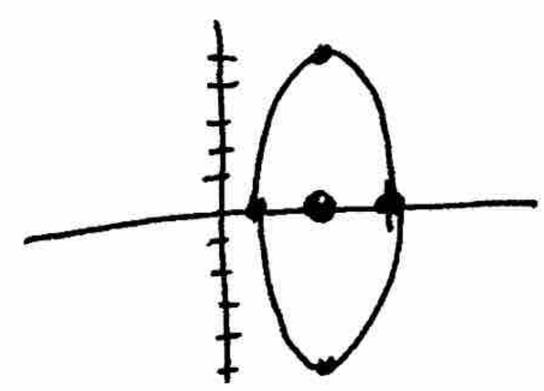


8. $\frac{(x-2)^2}{1} + \frac{y^2}{25} = 1$

a=1 b=5

center (2,0)

vertices
(1,0) (2,5)
(3,0) (2,-5)



9. Find the equation of the circle with center $(\overset{h}{0},\overset{k}{0})$ and radius $r = 6$.

$(x-h)^2 + (y-k)^2 = r^2$

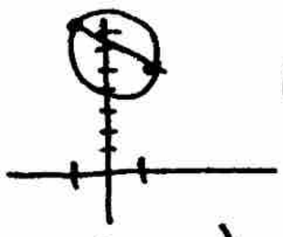
$x^2 + y^2 = 36$

10. Find the equation of the circle with center $(1, 4)$ and radius $r = 4$.

h k

$$(x-1)^2 + (y-4)^2 = 16$$

11. Find the equation of the circle with diameter endpoints $(1, 5)$ and $(-1, 7)$.



Midpoint is center

$\left(\frac{1+-1}{2}, \frac{5+7}{2}\right)$

c: (0,6)

r^2: $(\sqrt{2})^2$

distance of dia

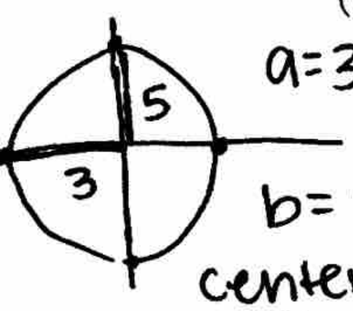
$\sqrt{(-1-1)^2 + (7-5)^2} = \sqrt{8}$

radius = ½ diameter

$r = \frac{\sqrt{8}}{2} = \frac{\cancel{2}\sqrt{2}}{\cancel{2}}$

$$\boxed{x^2 + (y-6)^2 = 2}$$

12. Find the equation of the ellipse with vertices $(3, 0)$, $(-3, 0)$, $(0, 5)$, and $(0, -5)$.



a=3

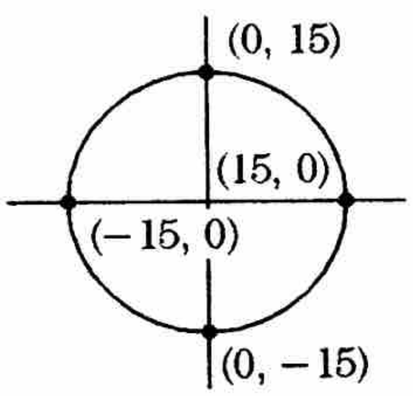
b=5

center: (0, 0)

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

Write the equation of the graph.

13.



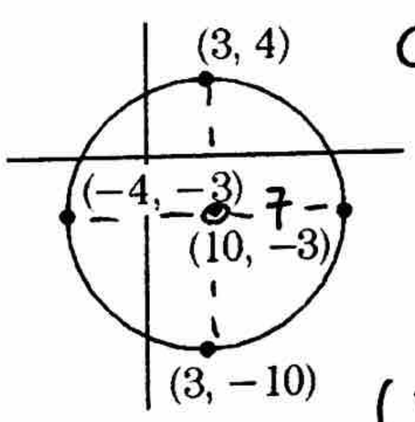
circle

center (0,0)

radius 15

$$x^2 + y^2 = 225$$

14.



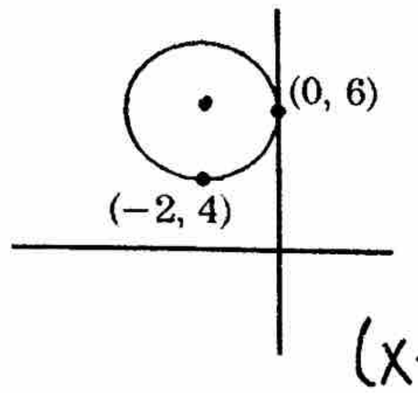
circle

center (3,-3)

radius 7

$$(x-3)^2 + (y+3)^2 = 49$$

15.



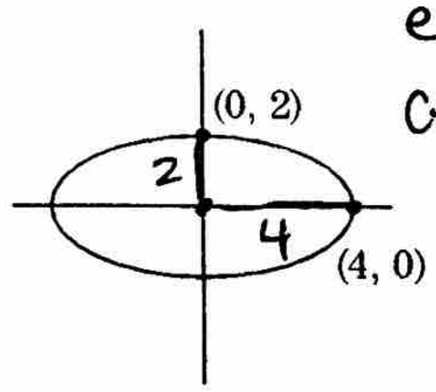
circle

center (-2, 6)

radius 2

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

16.



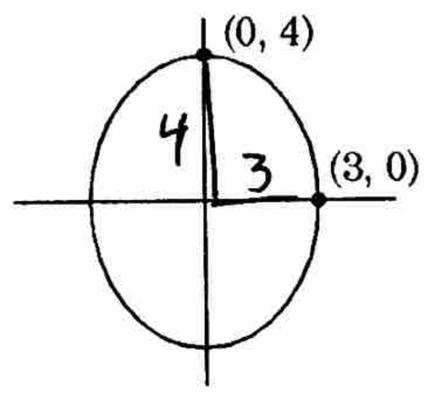
ellipse

center (0,0)

a=4 b=2

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

17.



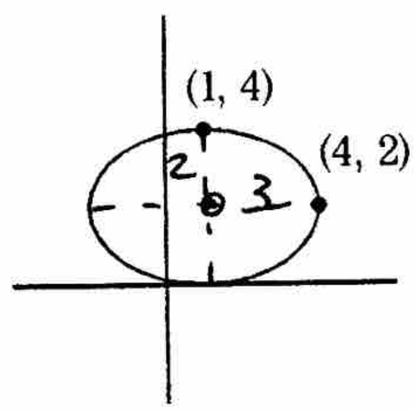
ellipse

center (0,0)

a=3 b=4

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

18.



ellipse

center (1,2)

a=3 b=2

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