

Conics - Circles and Ellipses Notes

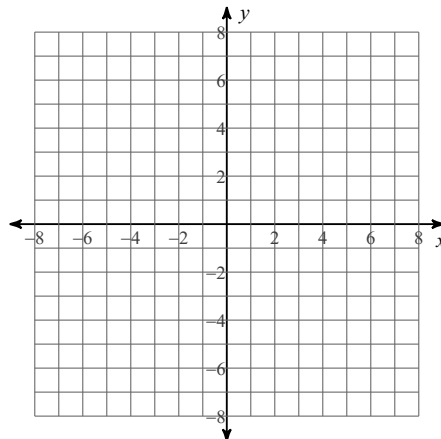
Date _____ Period _____

Standard Form of a circle.

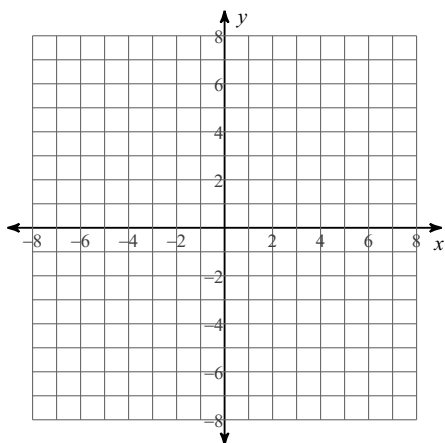
1) $(x - h)^2 + (y - k)^2 = r^2$

Graph each circle.

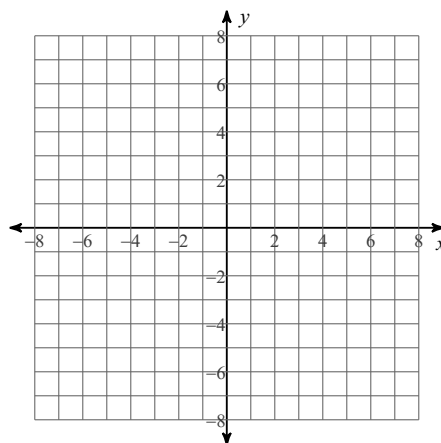
2) $x^2 + (y + 2)^2 = 9$

**Graph each ellipse.**

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



4) $(x + 6)^2 + \frac{(y - 1)^2}{25} = 1$



Standard form of an ellipse: $\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$

5) if $a > b$ 6) if $a < b$

Identify the center, vertices, co-vertices, and foci of each.

7) $(x - 4)^2 + \frac{(y + 7)^2}{36} = 1$

Use the information provided to write the standard form equation of each ellipse.

8) Vertices: $(-8, 3), (-8, -17)$
Co-vertices: $(-1, -7), (-15, -7)$

9) Endpoints of major axis: $(-2, -1), (8, -1)$
Length of minor axis: 8 units

10) Vertices: $(14, 10), (4, 10)$
Foci: $(13, 10), (5, 10)$

11) Foci: $(3, 12), (3, 6)$
Endpoints of minor axis: $(7, 9), (-1, 9)$

Convert to standard form.

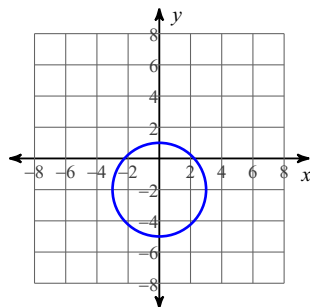
$$12) 4x^2 + y^2 + 48x - 14y + 129 = 0$$

$$13) 4x^2 + 9y^2 - 72x - 36y + 36 = 0$$

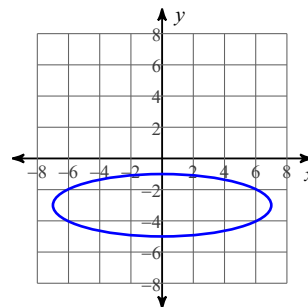
Answers to Conics - Circles and Ellipses Notes (ID: 1)

1)

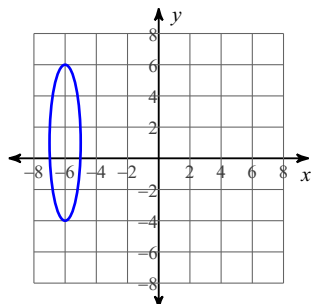
2)



3)



4)



5)

6)

7) Center: $(4, -7)$

Vertices: $(4, -1), (4, -13)$

Co-vertices: $(5, -7), (3, -7)$

Foci: $(4, -7 + \sqrt{35}), (4, -7 - \sqrt{35})$

$$8) \frac{(x+8)^2}{49} + \frac{(y+7)^2}{100} = 1$$

$$9) \frac{(x-3)^2}{25} + \frac{(y+1)^2}{16} = 1$$

$$10) \frac{(x-9)^2}{25} + \frac{(y-10)^2}{9} = 1$$

$$11) \frac{(x-3)^2}{16} + \frac{(y-9)^2}{25} = 1$$

$$12) \frac{(x+6)^2}{16} + \frac{(y-7)^2}{64} = 1$$

$$13) \frac{(x-9)^2}{81} + \frac{(y-2)^2}{36} = 1$$