

11 Corrective Assignment – Conic Sections

Unit 11 Equations	$(x - h)^2 = 4p(y - k)$ or $(y - k)^2 = 4p(x - h)$	$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1$ or $\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$	$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$ or $\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$
	$(x - h)^2 + (y - k)^2 = r^2$		$x^2 + bx + \left(\frac{b}{2}\right)^2 = \left(x + \frac{b}{2}\right)^2$

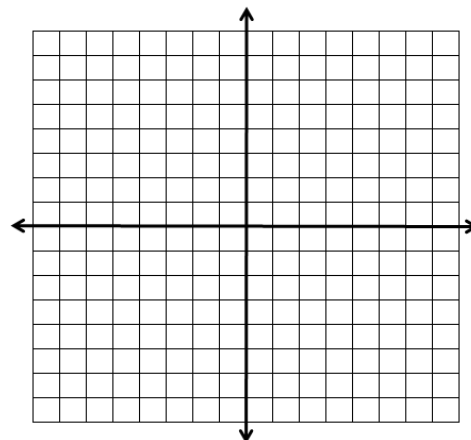
1. Sketch the graph of $(y + 2)^2 = 12(x - 2)$ and identify the given information.

Coordinate of vertex:

Direction it opens:

Coordinate of focus:

Equation of directrix:



For 2-3, given the following conditions, find an equation for the parabola. Use the conics form with the quantity squared isolated.

2. Vertex: $(0, 2)$ Directrix: $y = -4$.

3. Focus: $(5, -8)$
Directrix: $x = -1$

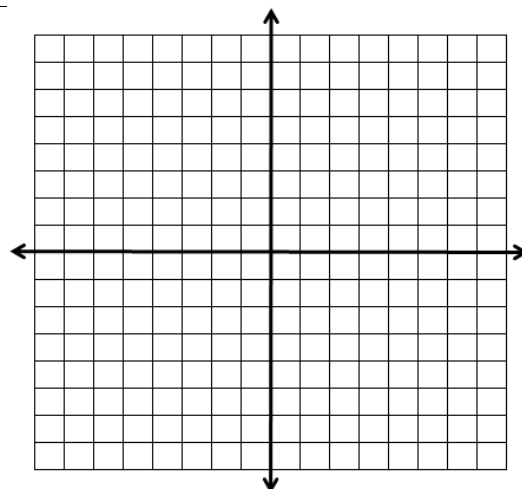
4. Sketch the graph of $x^2 + 36(y + 1)^2 = 36$ and identify the coordinate points for each of the following.

Center:

Vertices:

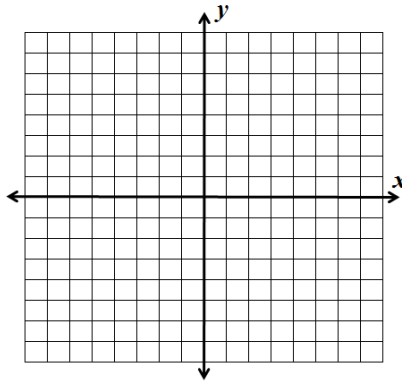
Co-vertices:

Foci:

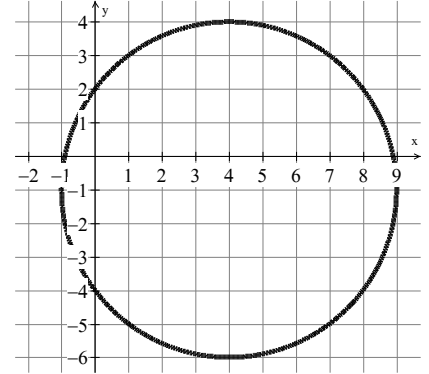


5. Write the equation of a circle with a center at $(2, 13)$ and radius of 3.

6. Sketch the graph of $(x - 2)^2 + (y + 2)^2 = 16$



7. Write the standard form equation of the circle.



For 8-9, given the following conditions, write the standard form equation of the ellipse.

8. Vertices: $(8, 11), (8, -1)$
Co-vertices $(13, 5), (3, 5)$

A) $\frac{(x-8)^2}{36} + \frac{(y-5)^2}{25} = 1$

B) $\frac{(x+8)^2}{36} + \frac{(y+5)^2}{25} = 1$

C) $\frac{(x+8)^2}{25} + \frac{(y+5)^2}{36} = 1$

D) $\frac{(x-8)^2}{25} + \frac{(y-5)^2}{36} = 1$

9. Vertices: $(22, 5), (-4, 5)$
Foci: $(14, 5), (4, 5)$

A) $\frac{(x-9)^2}{169} + \frac{(y-5)^2}{144} = 1$

B) $\frac{(x+9)^2}{144} + \frac{(y-5)^2}{169} = 1$

C) $\frac{(x+8)^2}{144} + \frac{(y+7)^2}{169} = 1$

D) $\frac{(x-9)^2}{144} + \frac{(y-5)^2}{169} = 1$

For 10-11, write the standard form equation of the hyperbola.

10. Vertices: $(6, 1), (-18, 1)$
Endpoints of Conjugate Axis:
 $(-6, 4), (-6, -2)$

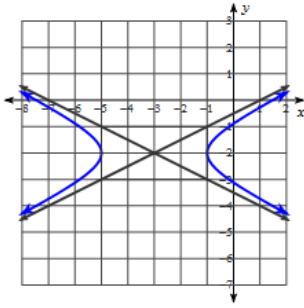
A) $\frac{(x+6)^2}{9} - \frac{(y-1)^2}{144} = 1$

B) $\frac{(y-1)^2}{144} - \frac{(x+6)^2}{9} = 1$

C) $\frac{(x+6)^2}{144} - \frac{(y-1)^2}{9} = 1$

D) $\frac{(y-1)^2}{9} - \frac{(x+6)^2}{144} = 1$

11.



- A) $\frac{(x+2)^2}{4} - (y-3)^2 = 1$
- B) $(y+2)^2 - \frac{(x+3)^2}{4} = 1$
- C) $\frac{(y+2)^2}{4} - (x+3)^2 = 1$
- D) $\frac{(x+3)^2}{4} - (y+2)^2 = 1$

For 12-13, write the equation in standard form and classify the conic.

12. $3y^2 + x + 30y + 77 = 0$

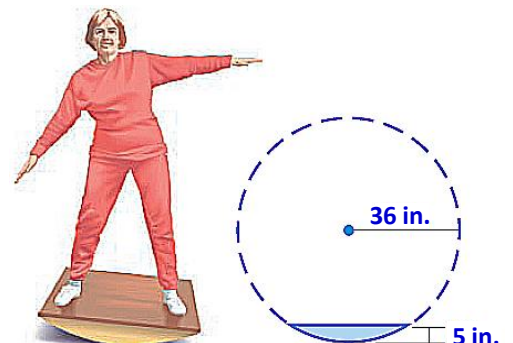
13. $x^2 + y^2 - 4x + 8y + 18 = 0$

14. The filament of a light bulb is a thin wire that glows when electricity passes through it. The filament of a car headlight is at the focus of a parabolic reflector, which sends light out in a straight beam. If the light bulb is 8 inches wide and $2\frac{2}{3}$ inches deep, how far from the base of the light is the filament located? (*Hint: write an equation and solve for p .*)

15. An elliptical stained glass window is planned in the construction of a new office building. The window will have a width of 20 feet and a height of 8 feet. Write an equation of the window that can be used on the blueprint. Assume the major axis of the window is horizontal, and the center is at the origin.

16. A tilt-board is a physical therapy device that a person rocks back and forth on. Suppose the ends of a tilt-board are part of a circle with a radius of 36 inches. The tilt-board has a depth of 5 inches.

- a. Write an equation of the circle with a center at the origin.
- b. Use your equation from part a to help you calculate the width of the tilt-board.



17. A radio station has a broadcast radius of 63 miles.

- a. Write an **inequality** that represents the broadcast range of the station. (Assume the center is at the origin.)
- b. Your house is located 51 miles east and 37 miles north of the radio station. Is your house within the broadcast range? (Plug in these values to your inequality.)

ANSWERS to Unit 11 Corrective Assignment

<p>1. Vertex: $(2, -2)$ Direction: right Focus: $(5, -2)$ Directrix: $x = -1$</p>	<p>2. $x^2 = 24(y - 2)$</p>	<p>4. Center: $(0, -1)$ Vertices: $(-6, -1)$ $(6, -1)$ Co-vertices: $(0, -2)$ $(0, 0)$ Foci: $(\pm\sqrt{35}, -1)$</p>	<p>5. $(x - 2)^2 + (y - 13)^2 = 9$</p>
<p>8. D) $\frac{(x-8)^2}{25} + \frac{(y-5)^2}{36} = 1$</p>	<p>9. A) $\frac{(x-9)^2}{169} + \frac{(y-5)^2}{144} = 1$</p>	<p>10. C) $\frac{(x+6)^2}{144} - \frac{(y-1)^2}{9} = 1$</p>	<p>11. D) $\frac{(x+3)^2}{4} - (y + 2)^2 = 1$</p>
<p>12. $(y + 5)^2 = -\frac{1}{3}(x + 2)$ Parabola</p>	<p>13. $(x - 2)^2 + (y + 4)^2 = 2$ Circle</p>	<p>14. 1.5 inches</p>	<p>15. $\frac{x^2}{100} + \frac{y^2}{16} = 1$</p>
<p>16 a. $x^2 + y^2 = 1296$</p> <p>16 b. $x \approx 18.3$ Width = 36.6 inches</p>	<p>17 a. $x^2 + y^2 \leq 3969$</p> <p>17 b. $3970 \leq 3969$ (FALSE) No! It is not within range</p>		

