<u>DIRECTIONS</u>: Write an equation for the conic described.

1. A circle with center at $(-4, 2)$ and radius 3.

$$(x + 4)^2 + (y - 2)^2 = 9$$

2. A parabola with vertex $(-3, 1)$ and directrix $x = -8$.

$$x + 3 = \frac{1}{20}(y - 1)^2$$

3. An ellipse with vertices $(-2, 2)$ & $(4, 2)$ and co-vertices at $(1, 1)$ & $(1, 3)$.

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

4. A hyperbola with vertices at $(-4, 2)$ & $(1, 2)$ and foci at $(-7, 2)$ & $(4, 2)$.

$$\frac{(x + \frac{3}{2})^2}{\frac{25}{4}} - \frac{(y - 2)^2}{24} = 1 \quad \text{or} \quad \frac{4\left(x + \frac{3}{2}\right)^2}{25} - \frac{(y - 2)^2}{24} = 1$$

<u>DIRECTIONS</u>: Classify the conic section as a circle, ellipse, hyperbola, or parabola.

5. $x^2 - 4y^2 + 3x - 26y - 30 = 0$

Hyperbola

6. $x^2 + y^2 - 10x - 2y + 10 = 0$

Circle

7. $4x^2 + 4y^2 - 16x + 4y - 60 = 0$

Circle

8. $16x^2 + 25y^2 - 18x - 20y + 8 = 0$

Ellipse

DIRECTIONS: Classify the conic section as a circle, ellipse, hyperbola, or parabola.

9. $2y^2 - 4x - 8y + 10 = 0$

Parabola

10. $9x^2 - y^2 + 54x + 10y + 55 = 0$

Hyperbola

11. $16x^2 + 9y^2 + 24x - 36y + 23 = 0$

Ellipse

12. $x^2 - 4x + 16y + 17 = 0$

Parabola

DIRECTIONS: First, classify the conic section as a circle, ellipse, hyperbola, or parabola; next, write its equation in standard form.

13. $4x^2 + y^2 - 48x - 4y + 48 = 0$

Ellipse
$$\frac{(x-6)^2}{25} + \frac{(y-2)^2}{100} = 1$$

14. $-9x^2 + 4y^2 - 36x - 16y - 164 = 0$

Hyperbola
$$\frac{(y-2)^2}{36} - \frac{(x+2)^2}{16} = 1$$

15. $y^2 - 2x - 20y + 94 = 0$

Parabola
$$x + 3 = \frac{1}{2}(y - 10)^2$$

16. $x^2 + y^2 - 12x - 24y + 36 = 0$

Circle
$$(x-6)^2 + (y-12)^2 = 144$$