

### 9.3 Hyperbolas

Name \_\_\_\_\_

Hour \_\_\_\_\_

Find the standard form of the equation of the hyperbola, direction, and find the center of the hyperbola.

1.  $4x^2 - 9y^2 = 36$

2.  $6y^2 - 3x^2 = 18$

3.  $9x^2 - y^2 - 36x - 6y + 18 = 0$

4.  $x^2 - 9y^2 + 2x - 54y - 80 = 9$

5.  $16y^2 - x^2 + 2x + 64y + 62 = 0$

6.  $9y^2 - x^2 + 2x + 54y + 62 = 0$

Classify the graph of the equation as a circle, parabola, an ellipse, or a hyperbola. Write the equation in standard form.

7.  $9x^2 + 4y^2 - 18x + 16y - 119 = 0$

8.  $x^2 + y^2 - 4x - 6y - 23 = 0$

9.  $16y^2 - 9x^2 + 32x + 54y - 209 = 0$

10.  $x^2 + 4x - 8y + 20 = 0$

11.  $y^2 + 12x + 4y + 28 = 0$

12.  $4x^2 + 25y^2 + 16x + 250y + 541 = 0$

13.  $y^2 - x^2 + 2x - 6y - 8 = 0$

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