

# Hyperbolas

Name: \_\_\_\_\_

For problems 1-8, find the major axis, a and b values, asymptotes, center, vertices, and foci. Then graph the hyperbola.

1.)  $\frac{x^2}{9} - \frac{y^2}{49} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

2.)  $\frac{x^2}{144} - \frac{y^2}{9} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

3.)  $\frac{y^2}{36} - \frac{x^2}{4} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

4.)  $\frac{y^2}{25} - x^2 = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

5.)  $\frac{(x+1)^2}{144} - \frac{(y+4)^2}{25} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

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

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

7.)  $\frac{(y-4)^2}{16} - \frac{(x-2)^2}{4} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

8.)  $\frac{(y+3)^2}{36} - \frac{(x+5)^2}{49} = 1$

axis ( ) a = \_\_\_\_\_ b = \_\_\_\_\_

asymptotes: \_\_\_\_\_

center: \_\_\_\_\_

vertices: \_\_\_\_\_

foci: \_\_\_\_\_

## Hyperbolas

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For problems 9 -15, write the equation for the hyperbola in standard form.

9.)  $x^2 - 25y^2 - 14x + 100y - 76 = 0$

10.)  $9x^2 - y^2 - 72x + 8y + 119 = 0$

11.)  $-9x^2 + 4y^2 - 36x - 16y - 164 = 0$

12.)  $-x^2 + y^2 - 2x - 12y + 31 = 0$

13.)  $16x^2 - 9y^2 - 72y - 288 = 0$

14.)  $y^2 - x^2 + 10y + 6x + 12 = 0$

15.)  $y^2 - 4x^2 - 6y + 32x - 71 = 0$