

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

Score : \_\_\_\_\_

Teacher : \_\_\_\_\_

Date : \_\_\_\_\_

## Writing Hyperbolas Equations

Use the given information to write the standard form equation of the hyperbolas.

1) Vertices:  $(-7, 9)$  ;  $(-7, -9)$

Conjugate Axis Length: 10 units

5) Foci:  $(-4 + 3\sqrt{17}, -8)$  ;  $(-4 - 3\sqrt{17}, -8)$

Conjugate Axis Length: 6 units

2) Vertices:  $(6, 4)$  ;  $(6, -18)$

Distance from Center to Focus:  $\sqrt{202}$

6) Vertices:  $(0, 8)$  ;  $(0, -16)$

Foci:  $(0, -4 + 4\sqrt{13})$  ;  $(0, -4 - 4\sqrt{13})$

3)  $-16x^2 + 25y^2 - 32x - 250y + 209 = 0$

7) Foci:  $(15, 7)$  ;  $(-5, 7)$

Asym.:  $y = \frac{3}{4}x + \frac{13}{4}$  and  $y = \frac{-3}{4}x + \frac{43}{4}$

4) Vertices:  $(10, -2)$  ;  $(-12, -2)$

Conjugate Axis Endpoints:  $(-1, -12)$ ;  $(-1, 8)$

8) Foci:  $(-2, 2 + 4\sqrt{13})$  ;  $(-2, 2 - 4\sqrt{13})$

Conjugate Axis Endpoints:  $(-10, 2)$ ;  $(6, 2)$



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## Writing Hyperbolas Equations

Use the given information to write the standard form equation of the hyperbolas.

1) Vertices:  $(-7, 9)$  ;  $(-7, -9)$

Conjugate Axis Length: 10 units

$$\frac{y^2}{81} - \frac{(x + 7)^2}{25} = 1$$

5) Foci:  $(-4 + 3\sqrt{17}, -8)$  ;  $(-4 - 3\sqrt{17}, -8)$

Conjugate Axis Length: 6 units

$$\frac{(x + 4)^2}{144} - \frac{(y + 8)^2}{9} = 1$$

2) Vertices:  $(6, 4)$  ;  $(6, -18)$

Distance from Center to Focus:  $\sqrt{202}$

$$\frac{(y + 7)^2}{121} - \frac{(x - 6)^2}{81} = 1$$

6) Vertices:  $(0, 8)$  ;  $(0, -16)$

Foci:  $(0, -4 + 4\sqrt{13})$  ;  $(0, -4 - 4\sqrt{13})$

$$\frac{(y + 4)^2}{144} - \frac{x^2}{64} = 1$$

3)  $-16x^2 + 25y^2 - 32x - 250y + 209 = 0$

$$\frac{(y - 5)^2}{16} - \frac{(x + 1)^2}{25} = 1$$

7) Foci:  $(15, 7)$  ;  $(-5, 7)$

Asym.:  $y = \frac{3}{4}x + \frac{13}{4}$  and  $y = \frac{-3}{4}x + \frac{43}{4}$

$$\frac{(x - 5)^2}{64} - \frac{(y - 7)^2}{36} = 1$$

4) Vertices:  $(10, -2)$  ;  $(-12, -2)$

Conjugate Axis Endpoints:  $(-1, -12)$ ;  $(-1, 8)$

$$\frac{(x + 1)^2}{121} - \frac{(y + 2)^2}{100} = 1$$

8) Foci:  $(-2, 2 + 4\sqrt{13})$  ;  $(-2, 2 - 4\sqrt{13})$

Conjugate Axis Endpoints:  $(-10, 2)$ ;  $(6, 2)$

$$\frac{(y - 2)^2}{144} - \frac{(x + 2)^2}{64} = 1$$

