Name : _____ Score : _____

Teacher : _____ Date : _____

Writing Hyperbolas Equations

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

1) Vertices: (19 , -3) ; (-5 , -3)
Foci: $(7 + \sqrt{145}\ , -3)$; $(7 - \sqrt{145}\ , -3)$

2) Vertices: (-3 , 6) ; (-3 , -18)
Conjugate Axis Endpoints: (-12,-6); (6,-6)

3) Vertices: (5 , 7) ; (5 , -11)
Distance from Center to Focus: $\sqrt{97}$

4) $9x^2 - 16y^2 - 144 = 0$

5) Foci: $(-4 , -6 + \sqrt{74}\ )$; $(-4 , -6 - \sqrt{74}\ )$
Asym.: $y = \frac{7}{5}x - \frac{2}{5}$ and $y = \frac{-7}{5}x - \frac{58}{5}$

6) Foci: $(\sqrt{265}\ , -8)$; $(-\sqrt{265}\ , -8)$
Conjugate Axis Endpoints: (0,-19); (0,3)

7) Foci: $(4 , 8 + \sqrt{130}\ )$; $(4 , 8 - \sqrt{130}\ )$
Conjugate Axis Length: 6 units

8) Vertices: (-8 , 7) ; (-8 , -13)
Asym.: $y = \frac{5}{4}x + 7$ and $y = \frac{-5}{4}x - 13$

Name : _____ Score : _____

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Writing Hyperbolas Equations

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

1) Vertices: (19 , -3) ; (-5 , -3)

Foci: $(7 + \sqrt{145}\ , -3)$; $(7 - \sqrt{145}\ , -3)$

$$\frac{(x - 7)^2}{144} - \frac{(y + 3)^2}{1} = 1$$

2) Vertices: (-3 , 6) ; (-3 , -18)

Conjugate Axis Endpoints: (-12,-6); (6,-6)

$$\frac{(y + 6)^2}{144} - \frac{(x + 3)^2}{81} = 1$$

3) Vertices: (5 , 7) ; (5 , -11)

Distance from Center to Focus: $\sqrt{97}$

$$\frac{(y + 2)^2}{81} - \frac{(x - 5)^2}{16} = 1$$

4) $9x^2 - 16y^2 - 144 = 0$

$$\frac{x^2}{16} - \frac{y^2}{9} = 1$$

5) Foci: $(-4 , -6 + \sqrt{74}\ )$; $(-4 , -6 - \sqrt{74}\ )$

Asym.: $y = \frac{7}{5}x - \frac{2}{5}$ and $y = \frac{-7}{5}x - \frac{58}{5}$

$$\frac{(y + 6)^2}{49} - \frac{(x + 4)^2}{25} = 1$$

6) Foci: $(\sqrt{265}\ , -8)$; $(-\sqrt{265}\ , -8)$

Conjugate Axis Endpoints: (0,-19); (0,3)

$$\frac{x^2}{144} - \frac{(y + 8)^2}{121} = 1$$

7) Foci: $(4 , 8 + \sqrt{130}\ )$; $(4 , 8 - \sqrt{130}\ )$

Conjugate Axis Length: 6 units

$$\frac{(y - 8)^2}{121} - \frac{(x - 4)^2}{9} = 1$$

8) Vertices: (-8 , 7) ; (-8 , -13)

Asym.: $y = \frac{5}{4}x + 7$ and $y = \frac{-5}{4}x - 13$

$$\frac{(y + 3)^2}{100} - \frac{(x + 8)^2}{64} = 1$$