Name : _____ Score : _____

Teacher : _____ Date : _____

Properties of Hyperbolas

Identify the following properties.

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

Vertices:

Foci:

Opens:

2) $\frac{(y - 4)^2}{144} - \frac{x^2}{36} = 1$

Vertices:

Foci:

Opens:

3) $\frac{(x - 8)^2}{121} - \frac{(y + 8)^2}{25} = 1$

Vertices:

Foci:

Opens:

4) $\frac{(y + 1)^2}{144} - \frac{(x - 7)^2}{100} = 1$

Vertices:

Foci:

Opens:

5) $\frac{(x + 4)^2}{81} - \frac{(y + 5)^2}{64} = 1$

Vertices:

Foci:

Opens:

6) $\frac{(y - 3)^2}{100} - \frac{(x + 2)^2}{81} = 1$

Vertices:

Foci:

Opens:

7) $\frac{(x + 6)^2}{64} - \frac{(y + 8)^2}{1} = 1$

Vertices:

Foci:

Opens:

8) $\frac{(x + 3)^2}{121} - \frac{(y - 7)^2}{100} = 1$

Vertices:

Foci:

Opens:

Name : _____ Score : _____

Teacher : _____ Date : _____

Properties of Hyperbolas

Identify the following properties.

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

Vertices = (11 , -4) , (-13 , -4)

Opens left/right

Foci = $(-1 + 4\sqrt{13}$, -4) , $(-1 - 4\sqrt{13}$, -4)

2) $\frac{(y - 4)^2}{144} - \frac{x^2}{36} = 1$

Vertices = (0 , 16) , (0 , -8)

Opens up/down

Foci = $(0 , 4 + 6\sqrt{5}$) , $(0 , 4 - 6\sqrt{5}$)

3) $\frac{(x - 8)^2}{121} - \frac{(y + 8)^2}{25} = 1$

Vertices = (19 , -8) , (-3 , -8)

Opens left/right

Foci = $(8 + \sqrt{146}$, -8) , $(8 - \sqrt{146}$, -8)

4) $\frac{(y + 1)^2}{144} - \frac{(x - 7)^2}{100} = 1$

Vertices = (7 , 11) , (7 , -13)

Opens up/down

Foci = $(7 , -1 + 2\sqrt{61}$) , $(7 , -1 - 2\sqrt{61}$)

5) $\frac{(x + 4)^2}{81} - \frac{(y + 5)^2}{64} = 1$

Vertices = (5 , -5) , (-13 , -5)

Opens left/right

Foci = $(-4 + \sqrt{145}$, -5) , $(-4 - \sqrt{145}$, -5)

6) $\frac{(y - 3)^2}{100} - \frac{(x + 2)^2}{81} = 1$

Vertices = (-2 , 13) , (-2 , -7)

Opens up/down

Foci = $(-2 , 3 + \sqrt{181}$) , $(-2 , 3 - \sqrt{181}$)

7) $\frac{(x + 6)^2}{64} - \frac{(y + 8)^2}{1} = 1$

Vertices = (2 , -8) , (-14 , -8)

Opens left/right

Foci = $(-6 + \sqrt{65}$, -8) , $(-6 - \sqrt{65}$, -8)

8) $\frac{(x + 3)^2}{121} - \frac{(y - 7)^2}{100} = 1$

Vertices = (8 , 7) , (-14 , 7)

Opens left/right

Foci = $(-3 + \sqrt{221}$, 7) , $(-3 - \sqrt{221}$, 7)