Name Solutions

11.5 Practice - Hyperbolas

Period ____

Use the information provided to write the standard form equation of each hyperbola.

1) Vertices: (4, 0), (–4, 0)
Endpoints of Conjugate Axis: (0, 2) (0, –2)

$$\frac{x^2}{16} - \frac{y^2}{4} = 1$$

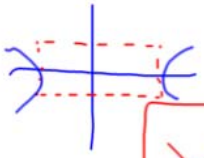
2) Vertices: (0, 3), (0, –3)
Endpoints of Conjugate Axis: (6, 0) (–6, 0)

$$\frac{y^2}{9} - \frac{x^2}{36} = 1$$

3) Vertices: (7, 0), (–7, 0)
Endpoints of Conjugate Axis: (0, 11) (0, –11)

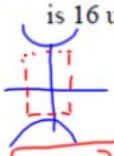
$$\frac{x^2}{49} - \frac{y^2}{121} = 1$$

4) Center at (0, 0)
Transverse axis is horizontal; central rectangle is 14 units wide and 12 units tall



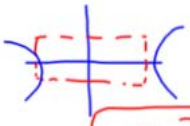
$$\frac{x^2}{49} - \frac{y^2}{36} = 1$$

5) Center at (0, 0)
Transverse axis is vertical; central rectangle is 16 units wide and 22 units tall



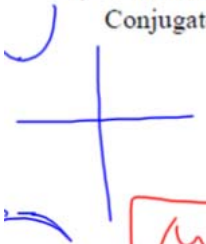
$$\frac{y^2}{121} - \frac{x^2}{64} = 1$$

6) Center at (0, 0)
Transverse axis is horizontal; central rectangle is 24 units wide and 18 units tall



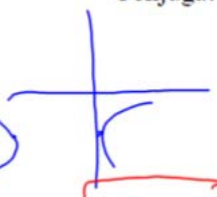
$$\frac{x^2}{144} - \frac{y^2}{81} = 1$$

7) Vertices: (–10, 12), (–10, –14)
Conjugate Axis is 20 units long



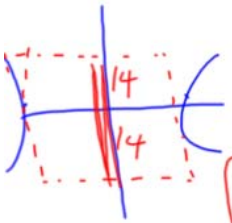
$$\frac{(y+1)^2}{169} - \frac{(x+10)^2}{100} = 1$$

8) Vertices: (0, –4), (–12, –4)
Conjugate Axis is 10 units long



$$\frac{(x+6)^2}{36} - \frac{(y+4)^2}{25} = 1$$

9) Vertices: (20, 2), (–8, 2)
Conjugate Axis is 28 units long



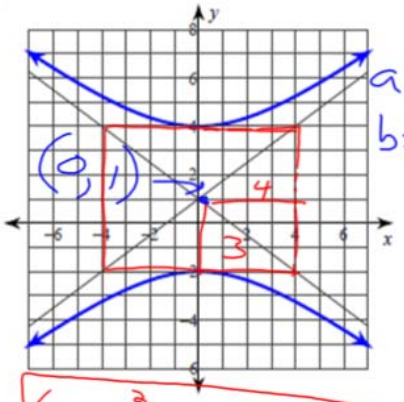
Center: (6, 2)

$a = 14$

$b = 14$

$$\frac{(x-6)^2}{196} - \frac{(y-2)^2}{196} = 1$$

10)

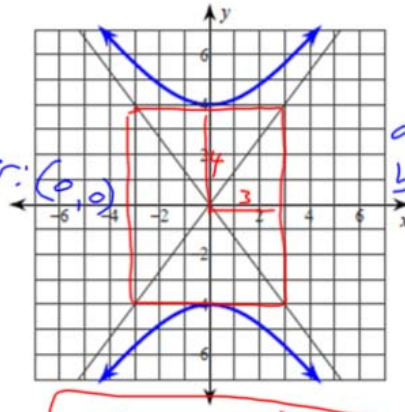


$a = 3$

$b = 4$

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

11)



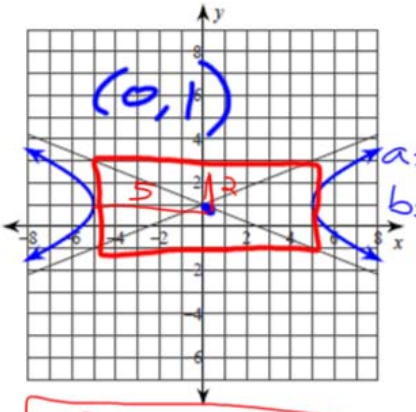
Center: (0, 0)

$a = 4$

$b = 3$

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

12)

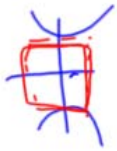


$a = 5$

$b = 2$

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

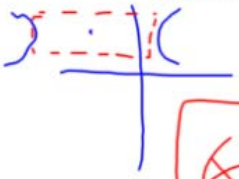
13) Center at (1, 0)
Transverse axis is vertical; central rectangle is 12 units wide and 20 units tall



$a = 10$ $b = 6$

$$\frac{y^2}{100} - \frac{(x-1)^2}{36} = 1$$

14) Center at (–9, 9)
Transverse axis is horizontal; central rectangle is 24 units wide and 20 units tall



$a = 12$

$b = 10$

$$\frac{(x+9)^2}{144} - \frac{(y-9)^2}{100} = 1$$

15) Center at (7, 7)
Transverse axis is vertical; central rectangle is 12 units wide and 14 units tall

$a = 7$

$b = 6$

$$\frac{(y-7)^2}{49} - \frac{(x-7)^2}{36} = 1$$