

Hyperbola Graphing WS

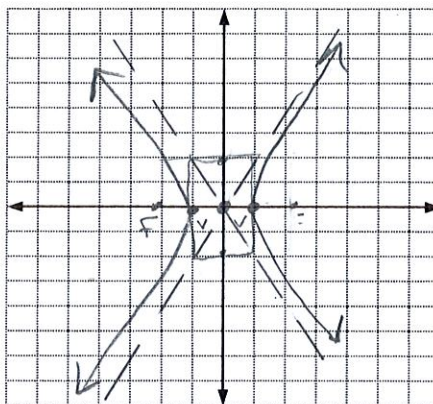
Name _____

Key

Graph each Hyperbola. Find the center, vertices, foci, and equation of the asymptotes for each hyperbola whose equation is given.

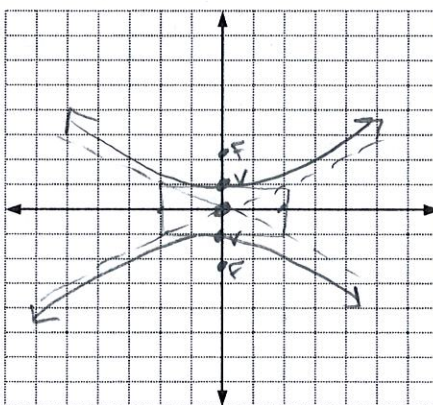
1. $\frac{x^2}{1} - \frac{y^2}{4} = 1$ Horizontal $a=1$
 $b=2$
 $c^2 = 4+1$
 $c^2 = 5$
 $c = \sqrt{5}$

Center $(0,0)$
 Vertices $(1,0)$ $(-1,0)$
 Foci $(\pm\sqrt{5}, 0)$
 Asymptotes $y = \pm 2x$
 $y = \pm \frac{b}{a}x = \pm \frac{2}{1}x$



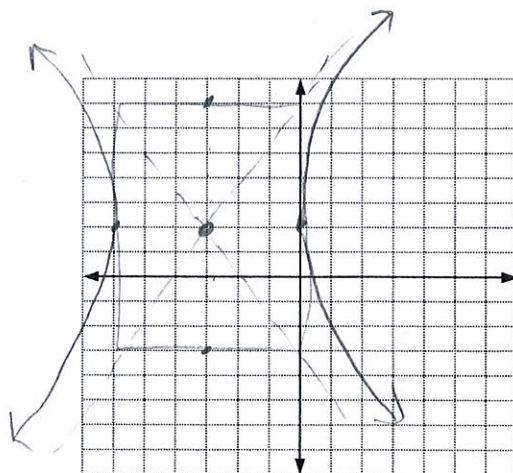
2. $\frac{y^2}{1} - \frac{x^2}{4} = 1$ Vertical $a=1$
 $b=2$
 $c^2 = 1+4$
 $c^2 = 5$
 $c = \sqrt{5}$

Center $(0,0)$
 Vertices $(0,1)$ $(0,-1)$
 Foci $(0, \pm\sqrt{5})$
 Asymptotes $y = \pm \frac{1}{2}x$
 $y = \pm \frac{a}{b}x = \pm \frac{1}{2}x$



3. $\frac{(x+3)^2}{9} - \frac{(y-2)^2}{25} = 1$ Horizontal $a=3$
 $b=5$

Center $(-3,2)$
 Vertices $(-6,2)$ $(0,2)$
 Foci $(-3 \pm \sqrt{34}, 2)$
 Asymptotes $y - 2 = \pm \frac{5}{3}(x + 3)$
 $c^2 = 9 + 25$
 $c^2 = 34$
 $c = \sqrt{34}$



Vertical \curvearrowright

$$4. \frac{(y+3)^2}{a^2 9} - \frac{(x-4)^2}{b^2 16} = 1$$

$$a=3$$

$$b=4$$

$$c^2 = 16+9$$

$$c^2 = 25$$

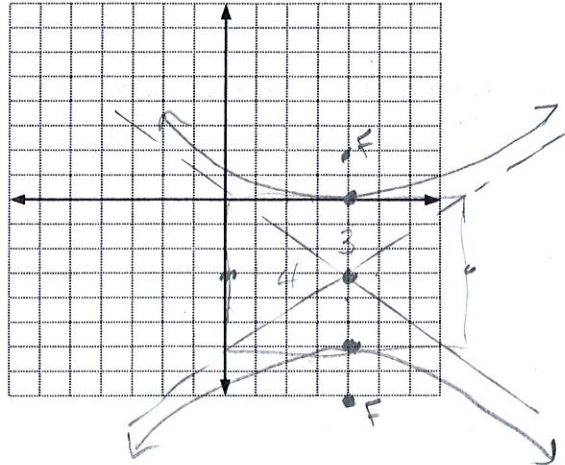
$$c=5$$

Center $(4, -3)$

Vertices $(4, 0)(4, -6)$

Foci $(4, 2)(4, -8)$

Asymptotes $y+3 = \pm \frac{3}{4}(x-4)$

$$y = \pm \frac{3}{4}x$$


Horiz. \curvearrowleft

$$5. \frac{(x+1)^2}{a^2 9} - \frac{(y-2)^2}{b^2 64} = 1$$

$$a=3$$

$$b=8$$

$$c^2 = 64+9$$

$$c^2 = 73$$

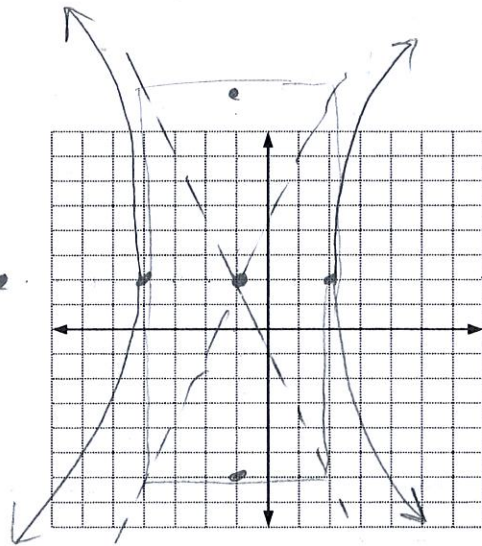
$$c = \sqrt{73}$$

Center $(-1, 2)$

Vertices $(-4, 2)(2, 2)$

Foci $(-1 \pm \sqrt{73}, 2)$

Asymptotes $y-2 = \pm \frac{8}{3}(x+1)$

$$y = \pm \frac{8}{3}x$$


vert. \curvearrowright

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

$$a=6$$

$$b=2$$

$$c^2 = 36+4$$

$$c^2 = 40$$

$$c = \pm \sqrt{40}$$

$$c = \pm 2\sqrt{10}$$

Center $(0, 2)$

Vertices $(0, 8)(0, -4)$

Foci $(0, 2 \pm 2\sqrt{10})$

Asymptotes $y-2 = \pm 3x$

