

# Hyperbola Graphing WS

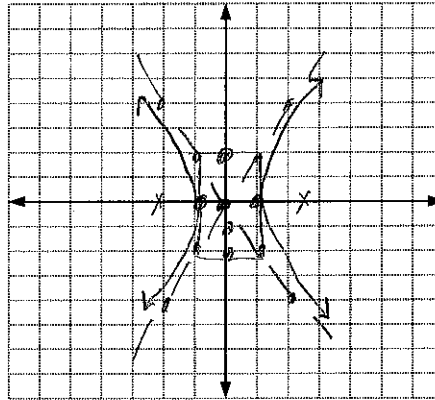
Name key

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

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

$c^2 = a^2 + b^2$   
 $c^2 = 1 + 4$   
 $c^2 = 5$   
 $c = \sqrt{5}$   
 $\approx 2.2$

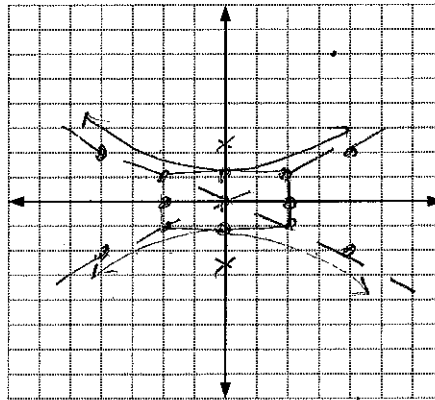
Center  $(0, 0)$   
 Vertices  $(\pm 1, 0)$   
 Foci  $(\pm \sqrt{5}, 0)$   
 Asymptotes  $y = \pm 2x$



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

$c^2 = a^2 + b^2$   
 $c^2 = 1 + 4$   
 $c^2 = 5$   
 $c = \sqrt{5}$   
 $\approx 2.2$

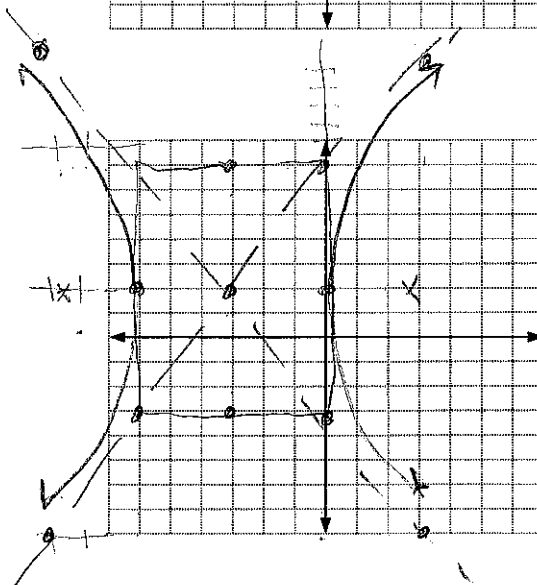
Center  $(0, 0)$   
 Vertices  $(0, \pm 1)$   
 Foci  $(0, \pm \sqrt{5})$   
 Asymptotes  $y = \pm \frac{1}{2}x$



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

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

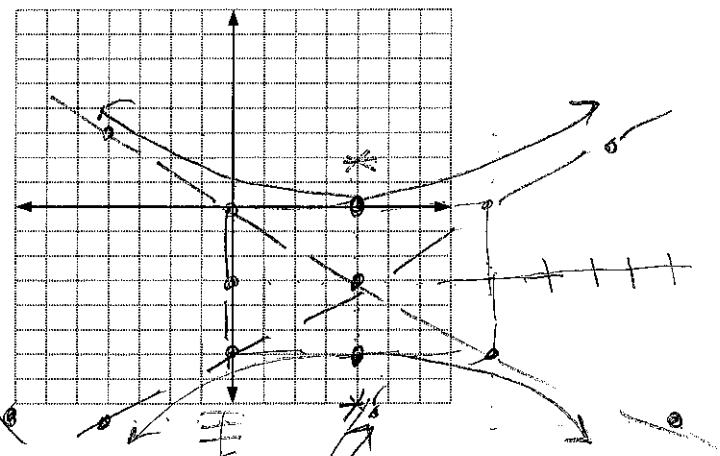
$c^2 = a^2 + b^2$   
 $c^2 = 9 + 25$   
 $c^2 = 34$   
 $c = \sqrt{34}$   
 $\approx 5.8$



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

$c^2 = a^2 + b^2$   
 $c^2 = 9 + 16$   
 $c^2 = 25$   
 $c = 5$

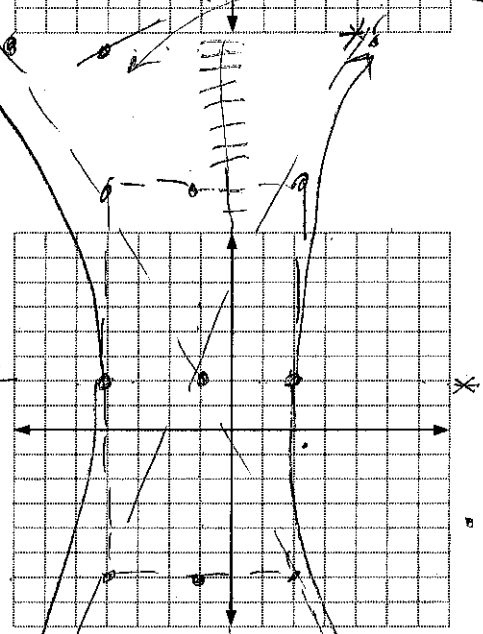
Center (4, -3)  
 Vertices (4, 0)(4, -6)  
 Foci (4, 2)(4, -8)  
 Asymptotes  $y + 3 = \pm \frac{3}{4}(x - 4)$



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

$c^2 = a^2 + b^2$   
 $c^2 = 9 + 64$   
 $c^2 = 73$   
 $c = \sqrt{73}$   
 $\approx 8.54$

Center (-1, 2)  
 Vertices (-4, 2)(2, 2)  
 Foci  $(-1 \pm \sqrt{73}, 2)$   
 Asymptotes  $y - 2 = \pm \frac{8}{3}(x + 1)$



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

Center (0, 2)  
 Vertices (0, 8)(0, -4)  
 Foci  $(0, 2 \pm 2\sqrt{10})$   
 Asymptotes  $y - 2 = \pm 3x$

$c^2 = a^2 + b^2$   
 $c^2 = 36 + 4$   
 $c^2 = 40$   
 $c = 2\sqrt{10}$   
 $\approx 6.3$

