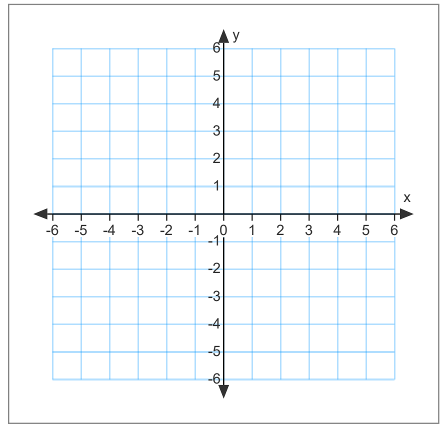
Warm up

1. Find the vertex, directrix and latus rectum endpoints for
   $y^2 - 2y - 8x + 1 = 0$



$V(0,1)$ $\quad y^2 - 2y + 1 = 8x - 1 + 1$

$F(2,1)$ $\quad \frac{1}{8}(y-1)^2 = 8x \quad p = 2$

$D: x = -2$ $\quad$ LREP $(2,5)(2,-3)$

2. Find the equation of the ellipse with

   M (-3, 1) V (-3, 3) F (-3, 0)

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

Dec 4-7:48 AM

29.

$9x^2 - 36x \quad 25y^2 - 50y \quad = -60$

$9(x^2 - 4x + 2^2) + 25(y^2 - 2y + 1) = -60 + 36 + 25$

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

$a = \frac{1}{3}$

$b = \frac{1}{5}$

$c = \frac{\sqrt{34}}{15}$

$V(0, \pm 5) \quad a = 5$

$m(0,0)$

pt $(4,2)$

$$\frac{x^2}{b^2} + \frac{y^2}{25} = 1$$

$$\frac{4^2}{b^2} + \frac{2^2}{25} = 1$$

$V(0,4)(4,4)$

minor $= 2$

$b = 1$

$m(2,4)$

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

Apr 17-12:58 PM

10.4 The Hyperbola

Nov 30-3:25 PM

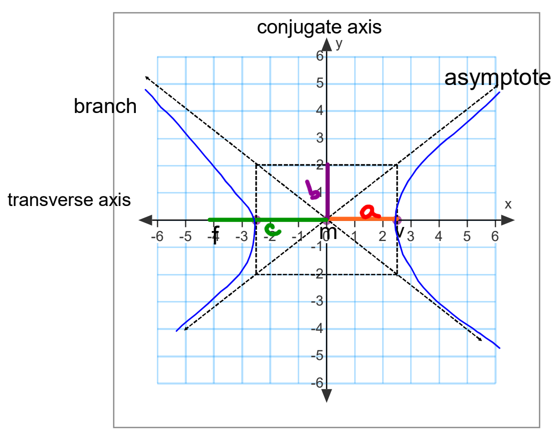
Definition of Hyperbola

A **hyperbola** is the set of all points (x, y) in a plane, the difference of whose distances from two distinct fixed points **(foci)** is a positive constant. See Figure 10.29.

middle to vertices = a

middle to box side = b

middle to focus = c



Nov 30-3:25 PM

$$\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$$

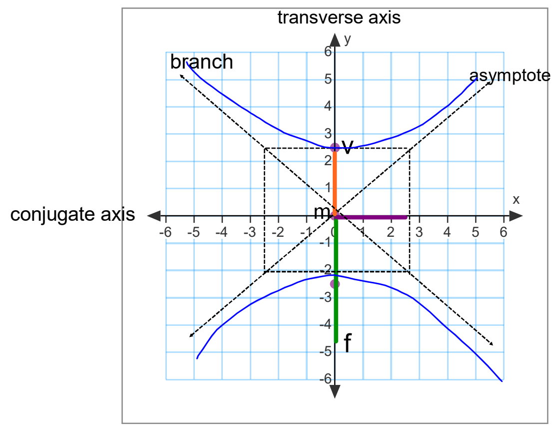
$$c^2=a^2+b^2$$

asymptotes:

$$y-k=\pm\frac{b}{a}(x-h)$$

horizontal hyperbola

$$\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$$



asymptotes: $y-k=\pm\frac{a}{b}(x-h)$

Nov 30-3:39 PM

Find the equation of the hyperbola if

F (0, 0) F (0, 8) V (0, 3) V (0, 5)

m (0, 4)

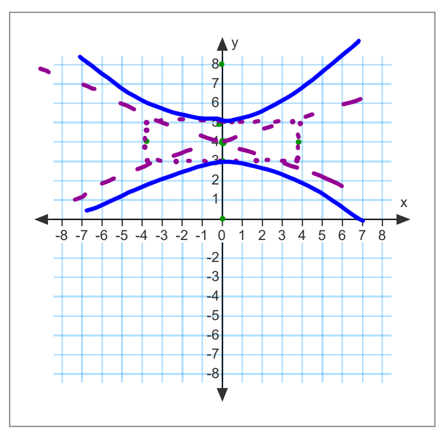
a = 1

b =

c = 4

$$\frac{(y-4)^2}{1}-\frac{(x)^2}{15}=1$$

$$y-4=\pm\frac{1}{\sqrt{15}}x$$



Nov 30-3:58 PM

Find the middle, vertices, foci and asymptotes and sketch the graph.

$$9x^2-4y^2+8y-40=0$$

$9x^2-4(y^2-2y+1)=40-4(1)$

$9x^2-4(y-1)^2=36$

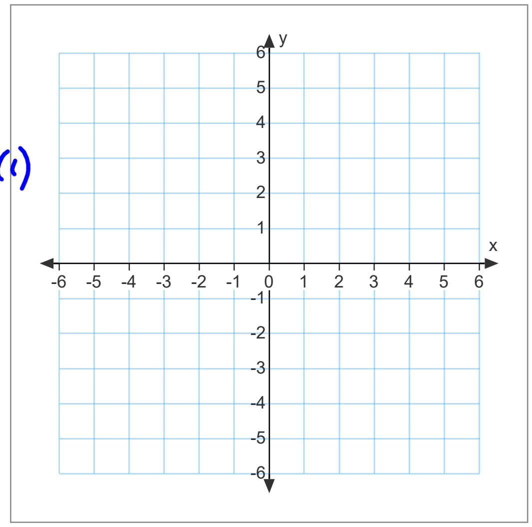
$\frac{x^2}{4}-\frac{(y-1)^2}{9}=1$

m(0,1) $a=2$

v (2,1) $b=3$

(-2,1) $c=\sqrt{13}$

F $(\pm\sqrt{13},1)$ $y-1=\pm\frac{3}{2}(x)$



Nov 30-4:09 PM

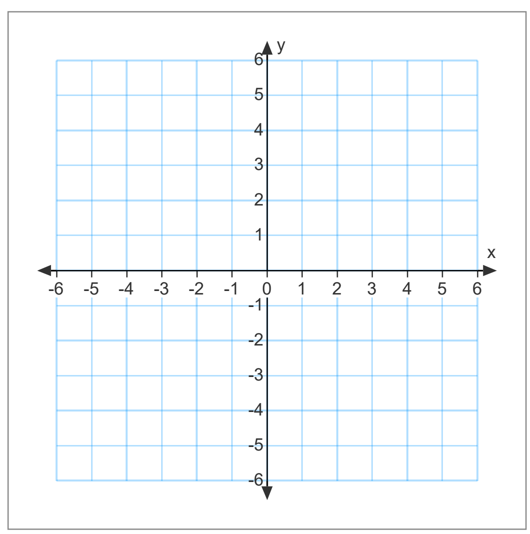
Find the standard form of the graph whose vertices are (3, 2) and (9, 2) and asymtotes are

$y=\frac{2}{3}x-5$ $\quad y=-\frac{2}{3}x-6$

$a=3$ m(6,2)

$b=2$

$\frac{(x-6)^2}{9}-\frac{(y-2)^2}{4}=1$



Apr 14-11:43 AM

HOMEWORK

p 760 1-4, 9-17 odd, 25, 29, 33, 37, 39

p750 55-59 odd

Feb 2-9:51 PM

Apr 19-1:34 PM