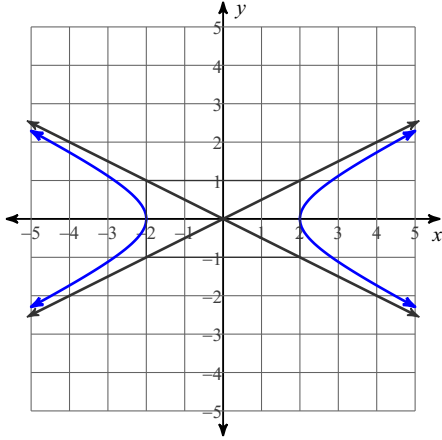


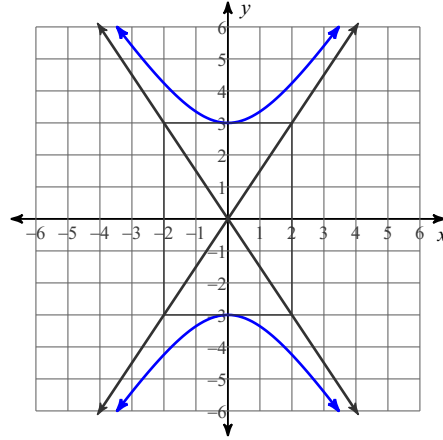
# 9.5 Hyperbolas

Use the information provided to write the standard form equation of each hyperbola. Identify the center, vertices, and foci.

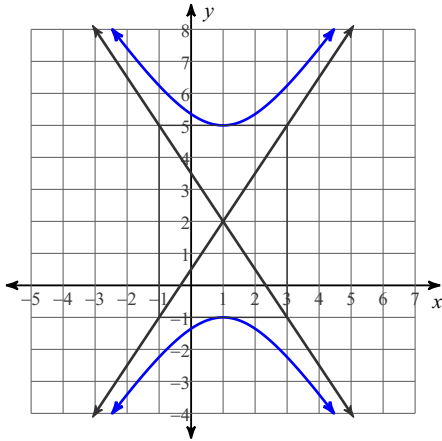
1)



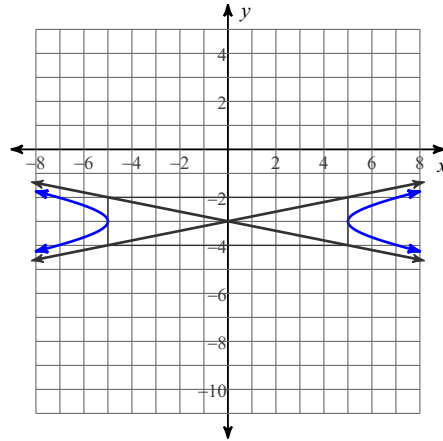
2)



3)



4)



5) Center at  $(-3, -7)$

Transverse axis is vertical and 18 units long

Congujate axis is 12 units long

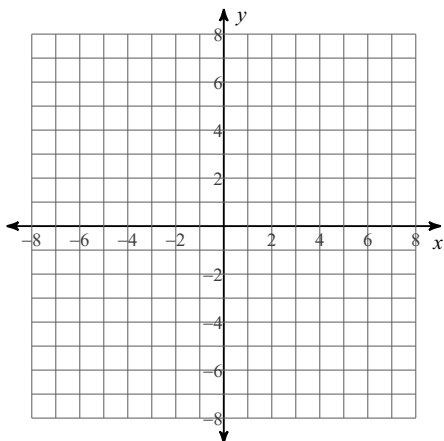
6) Center at  $(-4, -1)$

Transverse axis is horizontal and 16 units long

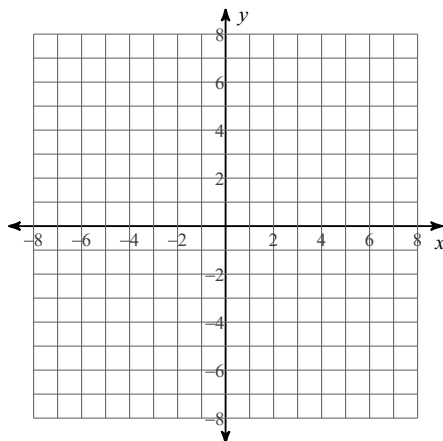
Congujate axis is 16 units long

Identify the center, vertices and foci of each. Then sketch the graph.

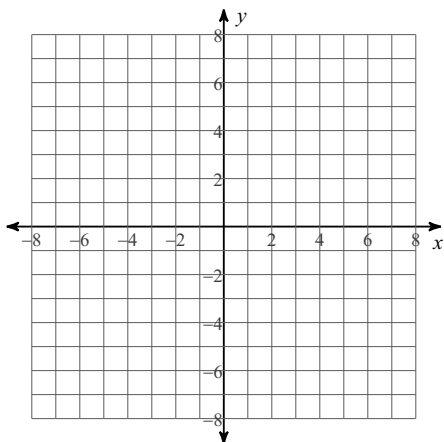
$$7) \frac{x^2}{4} - \frac{y^2}{25} = 1$$



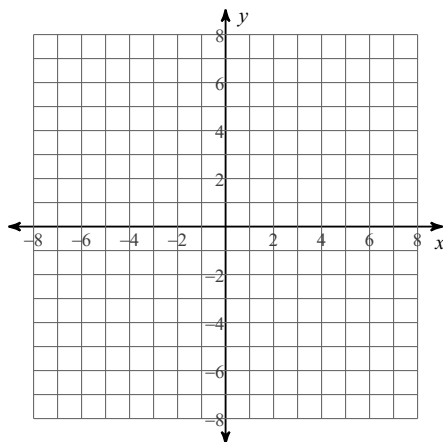
$$8) \frac{y^2}{4} - \frac{x^2}{9} = 1$$



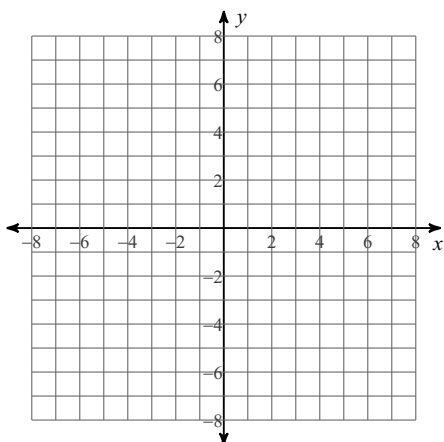
$$9) \frac{(x-1)^2}{16} - \frac{(y+1)^2}{4} = 1$$



$$10) (x+2)^2 - \frac{y^2}{9} = 1$$



$$11) \frac{y^2}{4} - (x-3)^2 = 1$$



$$12) \frac{(y+1)^2}{16} - \frac{(x-1)^2}{9} = 1$$

