

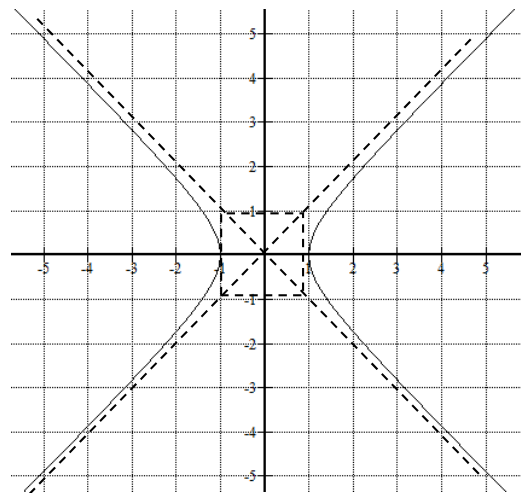
Unit 2: Conics

2.3 Hyperbolas

Basic hyperbola:

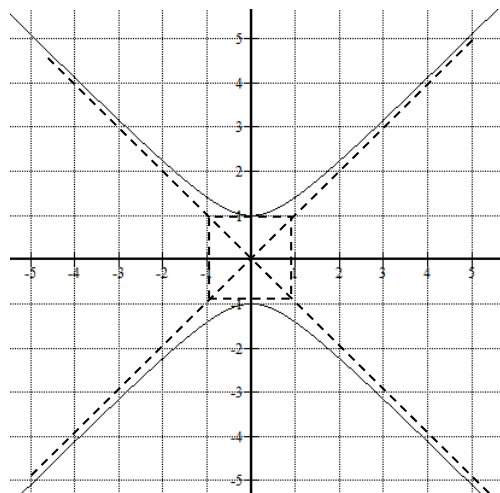
$$x^2 - y^2 = 1$$

Horizontal Transverse Axis



$$x^2 - y^2 = -1 \text{ or } y^2 - x^2 = 1$$

Vertical Transverse Axis



Asymptotes: $y = \pm x$

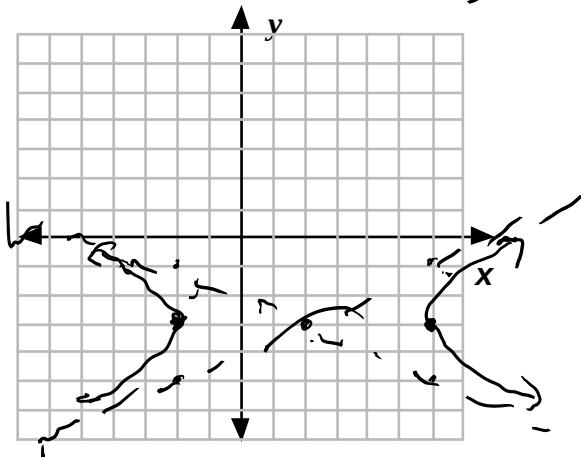
Transverse Axis: connects the vertices

Conjugate Axis: perpendicular to the transverse axis

Ex. Graph each conic on the grid provided:

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

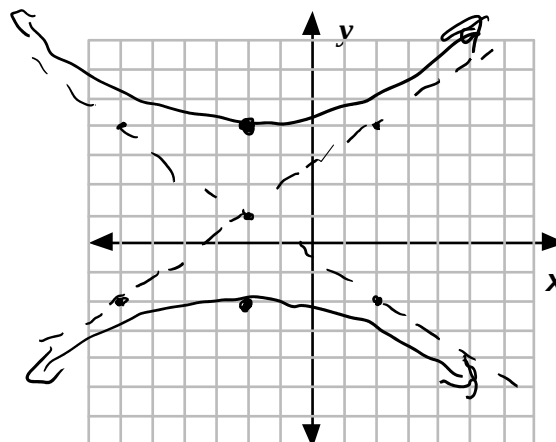
$(2, -3)$

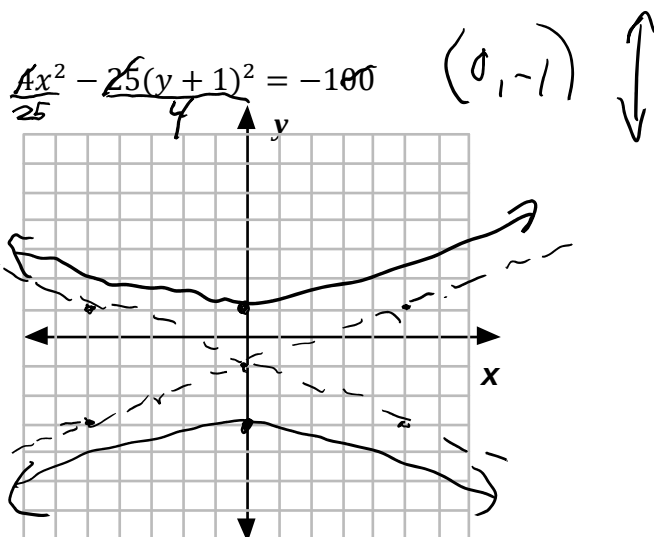


$$\frac{(y-1)^2}{9} - \frac{(x+2)^2}{16} = 1$$

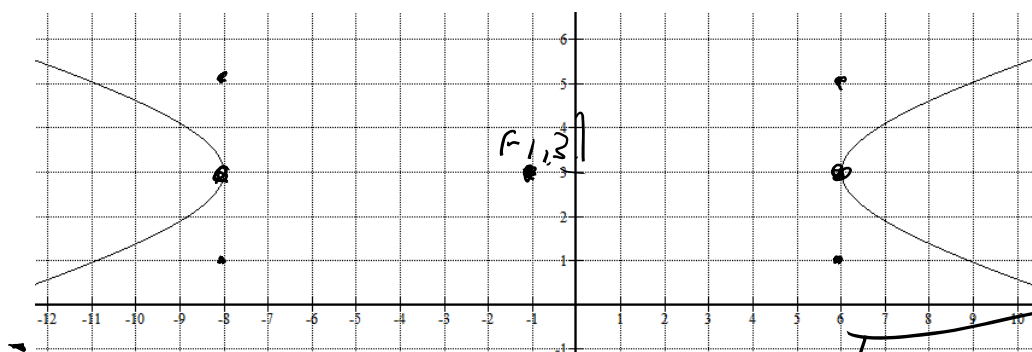
$(-2, 1)$

$\updownarrow$





Ex. Write the equation of each conic shown:



$$\frac{(x+1)^2}{49} - \frac{(y-3)^2}{4} = 1$$

