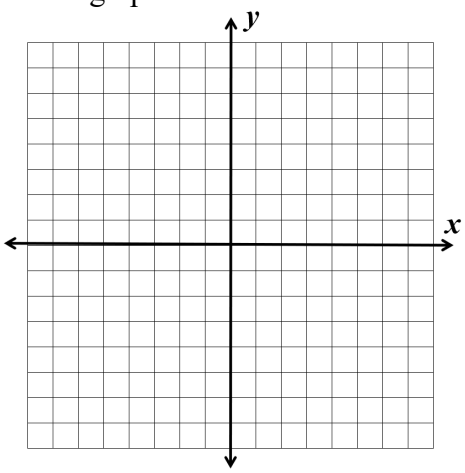
4.6C Conic Sections: Hyperbolas

AP Precalculus

Name: _____

CA #1

1. Use the equation $\frac{(x+2)^2}{36} - \frac{(y-3)^2}{16} = 1$ to find the following.

a. center	b. horizontal/vertical	c. Find the length of the transverse axis.	d. Find the length of the conjugate axis.
e. vertices	f. foci	g. sketch the graph 	

2. Find the equation of the hyperbola with a center at the origin and a transverse axis length of 10 and conjugate axis coordinates of $(6,0)$ and $(-6,0)$.

3. Find the equation of the hyperbola with foci $(5,-5), (5,5)$ and a conjugate axis length of 4.

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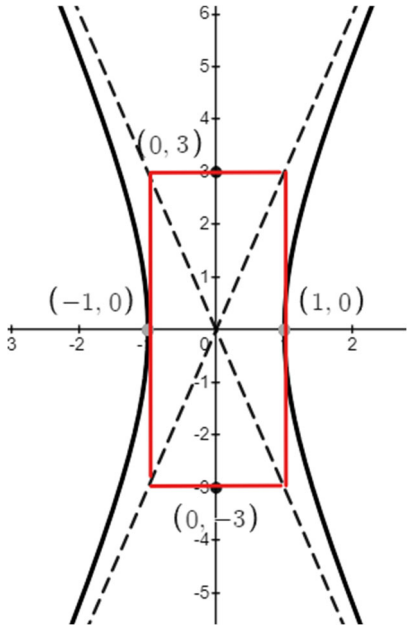
4. Match the graph with its equation.



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

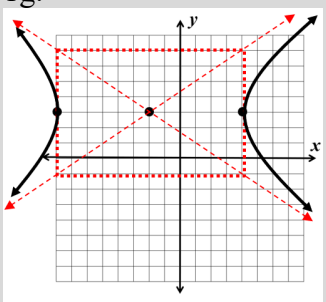
(B) $\frac{y^2}{9} - \frac{x^2}{1} = 1$

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

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

5. Put the equation $x^2 - 3y^2 - 4x + 12y + 1 = 0$ into standard form. Identify the center, vertices, and foci.

Answers to 4.6C CA #1

1a. Center: $(-2, 3)$ 1b. Horizontal	1c. Transverse axis: 12 1d. Conjugate axis: 8	1e. Vertices: $(-8, 3), (4, 3)$ 1f. Foci: $\left(-2 - \sqrt{52}, 3\right)$ and $\left(-2 + \sqrt{52}, 3\right)$	1g. 
2. $\frac{y^2}{25} - \frac{x^2}{36} = 1$	3. $\frac{y^2}{21} - \frac{(x-5)^2}{4} = 1$	4. A	5. $\frac{(y-2)^2}{3} - \frac{(x-2)^2}{9} = 1$ Center: $(2, 2)$ Foci: $\left(2, 2 \pm \sqrt{12}\right)$ Vertices: $\left(2, 2 \pm \sqrt{3}\right)$

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