Pre-Calculus Name_____ ID: 1

Conic Sections - Hyperbolas Notes

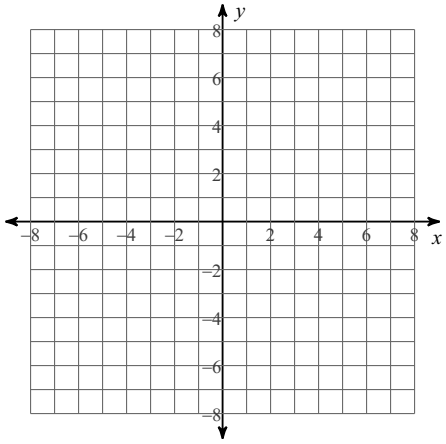
Date_____ Period____

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

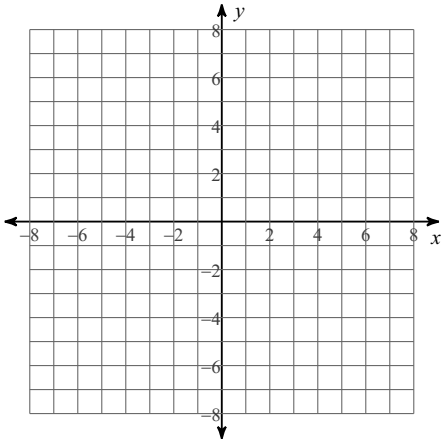
2) $\frac{(y-k)^2}{b^2} - \frac{(x-h)^2}{a^2} = 1$

Graph each equation.

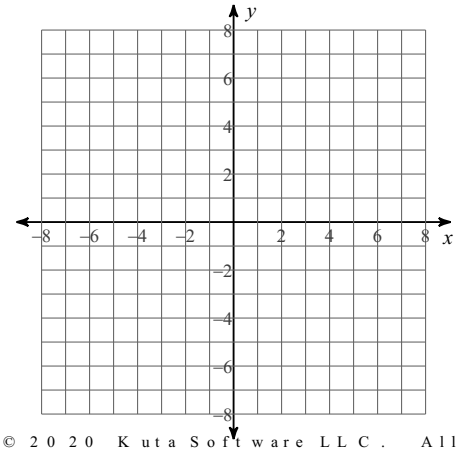
3) $\frac{x^2}{25} - \frac{y^2}{4} = 1$



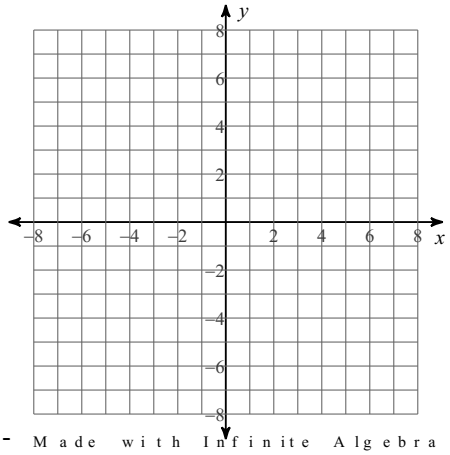
4) $\frac{y^2}{4} - \frac{x^2}{25} = 1$



5) $\frac{(x-3)^2}{4} - \frac{y^2}{25} = 1$



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



Use the information provided to write the standard form equation of each hyperbola.

7) Vertices: $(-7, 4)$, $(-7, -8)$
Conjugate Axis is 14 units long

8) Vertices: $(16, 3)$, $(-10, 3)$
Endpoints of Conjugate Axis: $(3, 9)$
$(3, -3)$

9) Vertices: $(-5, 6)$, $(-15, 6)$
Distance from Center to Focus = 13

10) Vertices: $(10, 10)$, $(10, -14)$
Foci: $(10, 11)$, $(10, -15)$

Identify the vertices, foci, and asymptotes of each.

11) $\frac{(y-1)^2}{49} - \frac{(x-6)^2}{16} = 1$

Use the information provided to write the standard form equation of each hyperbola.

12) $-9x^2 + 4y^2 + 18x + 48y - 189 = 0$

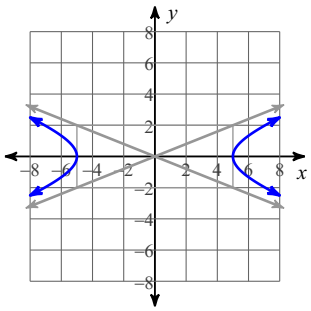
13) $4x^2 - y^2 - 48x - 52 = 0$

Answers to Conic Sections - Hyperbolas Notes (ID: 1)

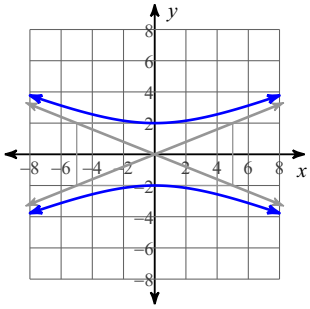
1)

2)

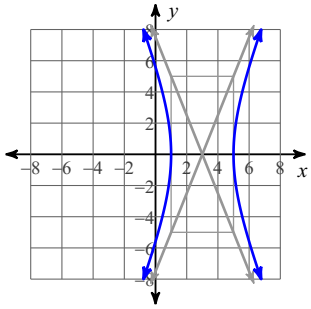
3)



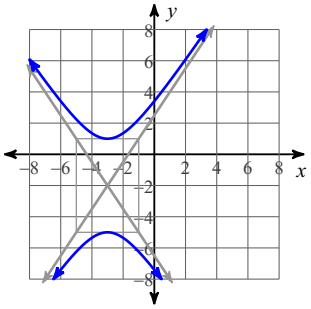
4)



5)



6)



7) $\frac{(y+2)^2}{36} - \frac{(x+7)^2}{49} = 1$

8) $\frac{(x-3)^2}{169} - \frac{(y-3)^2}{36} = 1$

9) $\frac{(x+10)^2}{25} - \frac{(y-6)^2}{144} = 1$

10) $\frac{(y+2)^2}{144} - \frac{(x-10)^2}{25} = 1$

11) Vertices: $(6, 8), (6, -6)$

Foci: $(6, 1 + \sqrt{65}), (6, 1 - \sqrt{65})$

Asym.: $y = \frac{7}{4}x - \frac{19}{2}$

$y = -\frac{7}{4}x + \frac{23}{2}$

12) $\frac{(y+6)^2}{81} - \frac{(x-1)^2}{36} = 1$

13) $\frac{(x-6)^2}{49} - \frac{y^2}{196} = 1$