

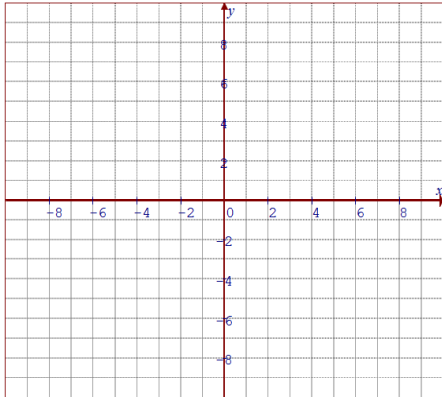
Name: _____

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Math 10/11 Enriched: Section 7.3 Graphing Hyperbolas

1. Given each equation below, graph it on the grid provided:

a) $x^2 - y^2 = 36$

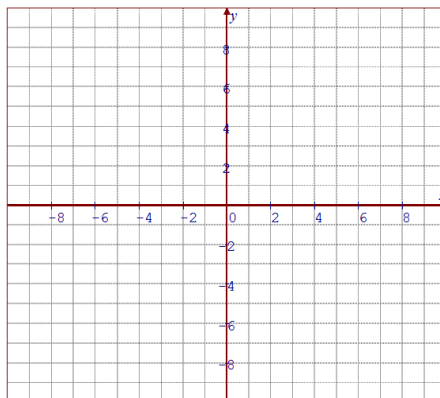


Vertices: Asymptotes:

Length of Transverse: Foci:

Domain: Range:

b) $(x + 2)^2 + (y + 2)^2 = -25$

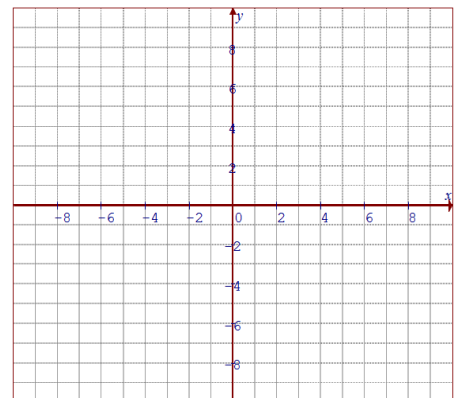


Vertices: Asymptotes:

Length of Transverse: Foci:

Domain: Range:

c) $4(x - 2)^2 - 2(y - 2)^2 = 200$

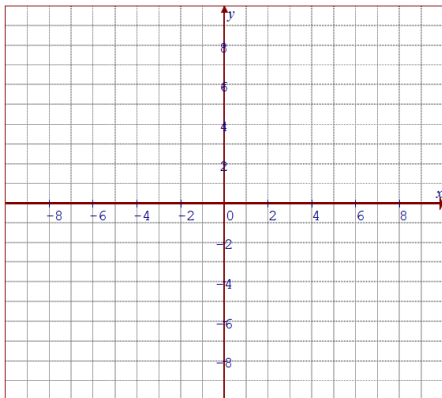


Vertices: Asymptotes:

Length of Transverse: Foci:

Domain: Range:

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

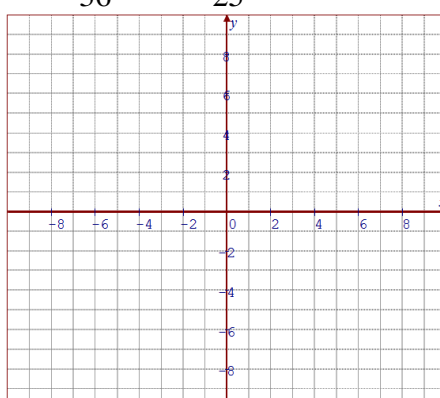


Vertices: Asymptotes:

Length of Transverse: Foci:

Domain: Range:

e) $\frac{(x + 3)^2}{36} - \frac{(y - 4)^2}{25} = 1$

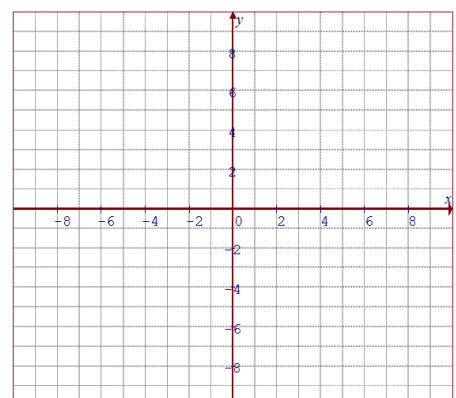


Vertices: Asymptotes:

Length of Transverse: Foci:

Domain: Range:

f) $36(x + 3)^2 - 49(y - 1)^2 = 1764$



Vertices: Asymptotes:

Length of Transverse: Foci:

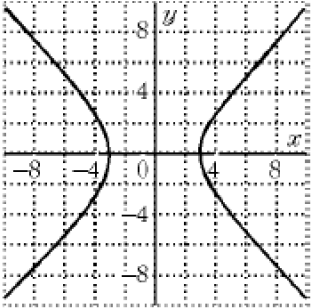
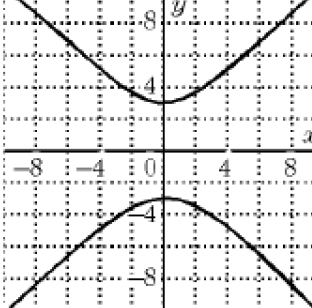
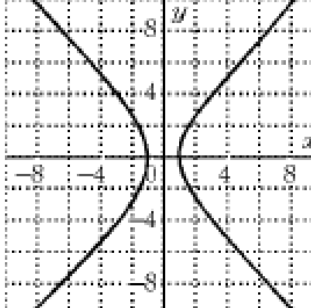
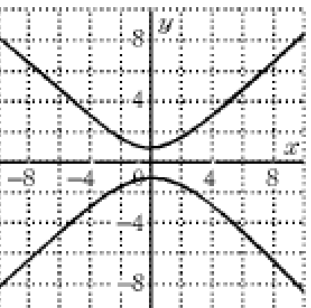
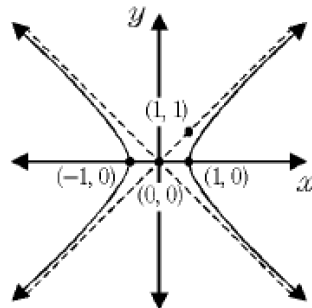
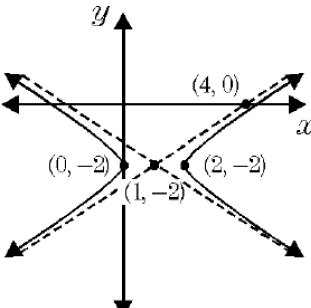
Domain: Range:

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2. Given each equation in general form, find the equation of the asymptote, location of the foci, and the equation in standard form:

$2x^2 - 3y^2 + 4x - 4 = 0$	$4x^2 - 3y^2 + 8x - 9y + 16 = 0$
$-9x^2 + 4y^2 + 54x + 45 = 0$	$-4x^2 + 3y^2 - 12x - 12y + 11 = 0$

3. Given the diagram of each hyperbola, provide an equation that describes it:

9. The vertices of a hyperbola are (2,3) and (2,-5). If one of the asymptotes has a slope of $\frac{2}{3}$, determine an equation for the hyperbola:
10. A rectangular hyperbola of the form $y^2 - x^2 = m^2$ has points (3,5) and (-5,z) on the graph. Determine the value of "z"
11. Given an equation in the form of $Ax^2 + By^2 = 1$, which value "A" or "B" must be negative in order for it to be an hyperbola with its vertices on the x-axis?
12. Determine the equations of a hyperbola with asymptotes $y = \pm \frac{4}{3}x + 1$ and the distance between its vertices is 8 units long.
13. A point where both coordinates are integers is known as a lattice point. How many lattice points lie on the parabola: $x^2 - y^2 = 2000^2$

14. Considering the equation $Ax^2 + By^2 + C = 0$. What coordinates must be satisfied by A, B, and C for this equation to represent each of the following conics:

- A circle with centre at the origin
- A rectangular hyperbola with the centre at the origin and vertices on the X-axis
- A rectangular hyperbola with the centre at the origin and vertices on the Y-axis

4. Given rectangle $PQRS$, with $P(2, 5)$, $Q(-5, 5)$, $S(2, -1)$, and $R(-5, -1)$, find the equation of the hyperbola whose asymptotes are the diagonals of the rectangle and is tangent to sides PQ and RS .

$$\frac{(y-2)^2}{9} - \frac{(x+\frac{3}{2})^2}{\frac{49}{4}} = 1$$

2.

3. Sketch the graphs of these relations on the same grid if possible:

a) $x^2 + y^2 = 9$ b) $x^2 + y^2 = 0$ c) $x^2 + y^2 = -9$

4.