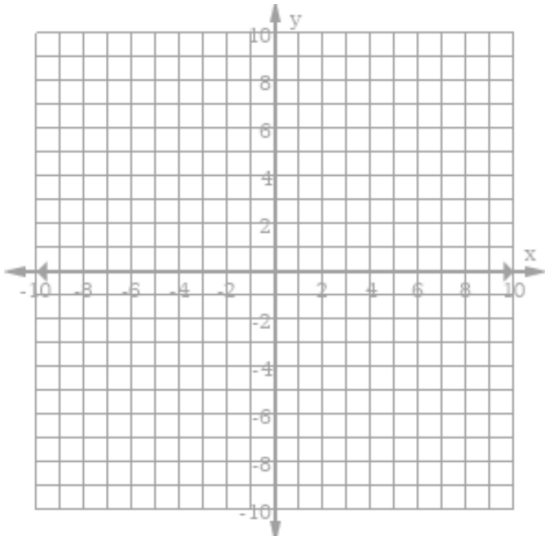
Mat 110 Quiz 3 Review

Name:_____

1. Sketch the graph of the functions below. Please show all your work and clearly show relevant points.

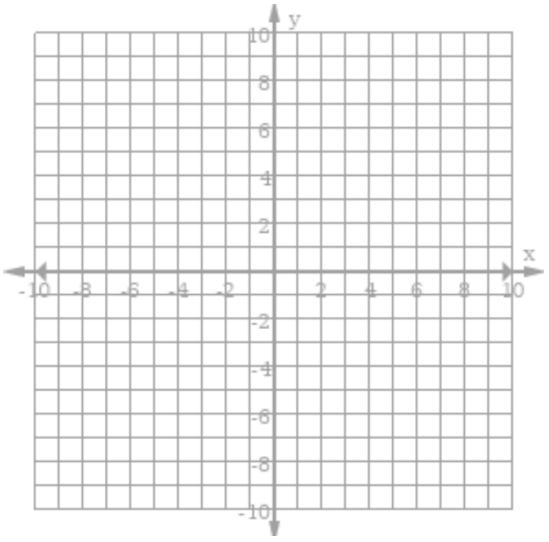
   a. $y - 3 = 2(x - 5)^2$

   Vertex: _____

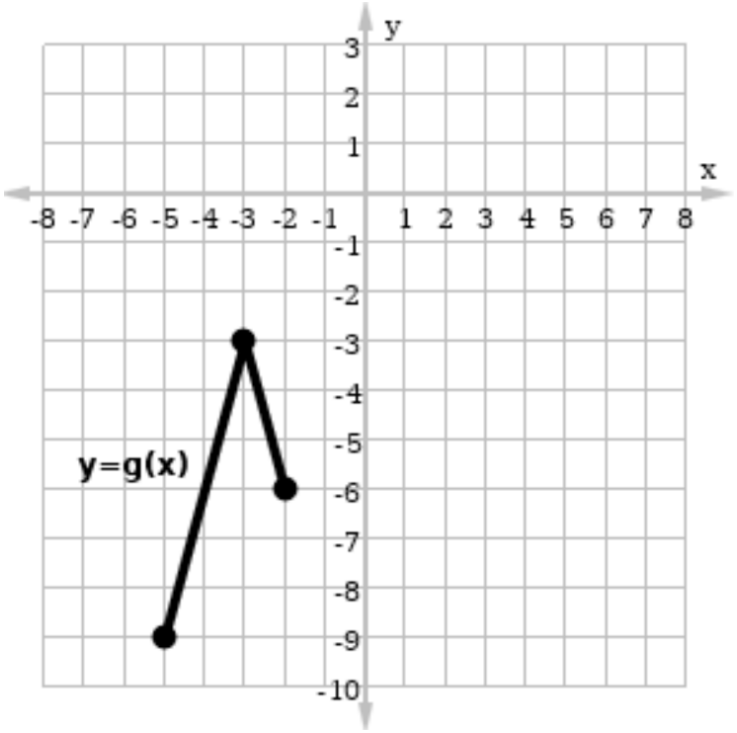


   b. $y = 2^{x-1} + 4$

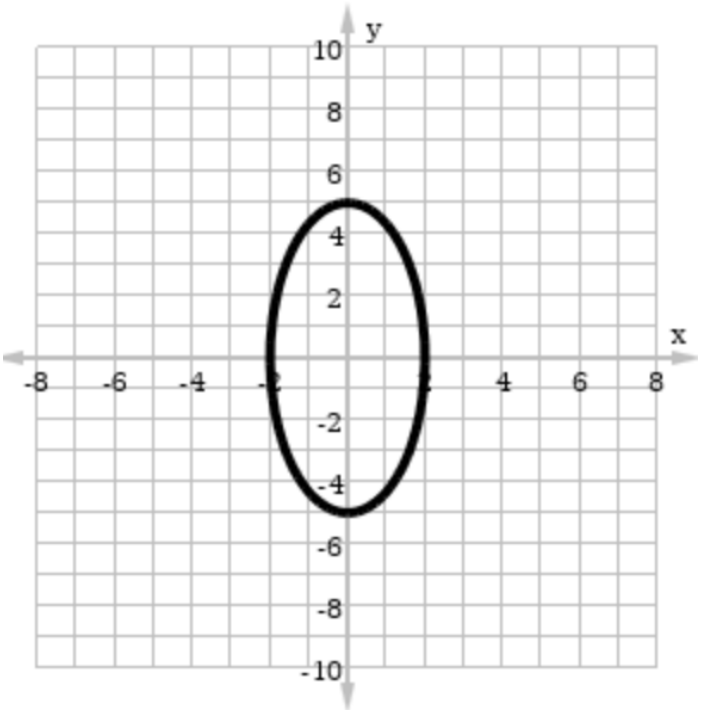
   Horizontal Asymptote: _____



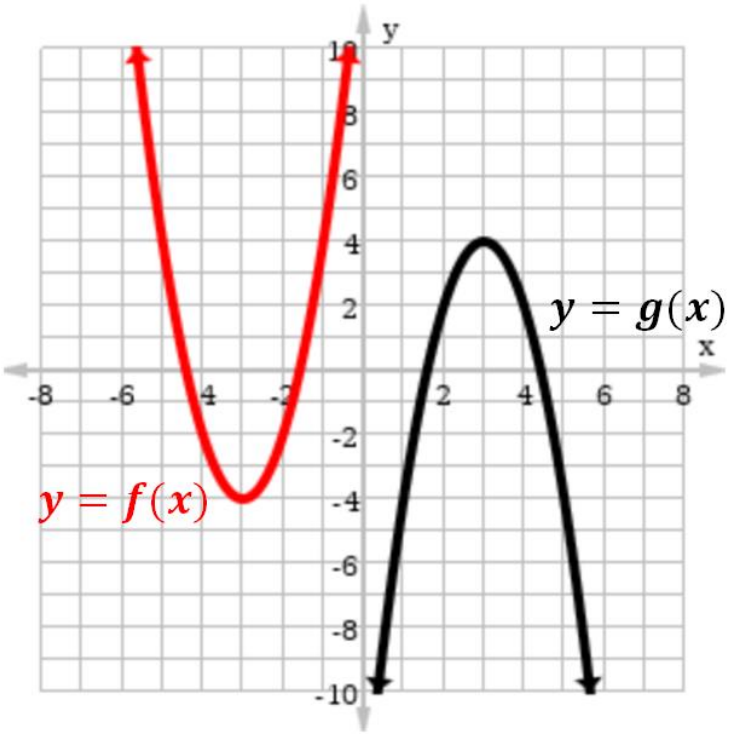
   c. $y = g(x)$ has the graph below, use that to find the graph of $y = \frac{1}{3}g(-x)$. **List all the steps!**



d. The graph of the relation $25x^2 + 4y^2 = 100$ is given below. Use this graph to sketch the graph of the relation $25(x+2)^2 + 4(y-3)^2 = 100$. **List all the steps!**

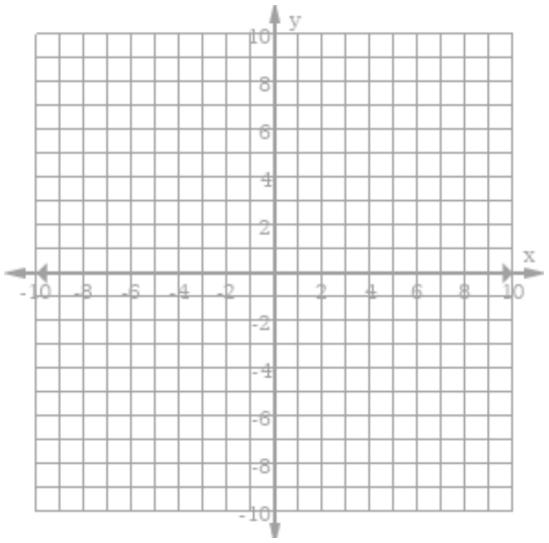


2. Consider the graphs below. Write an equation connecting $f(x)$ and $g(x)$ using transformation of functions.

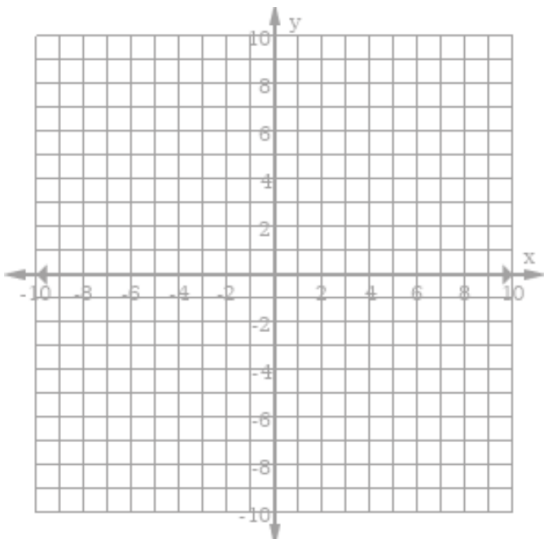


3. Identify the conic sections. Sketch the graph of the conic section and show all the relevant parts in the graph clearly. If you identify the conic section as
   I. a circle, please find the center and radius.
   II. as a parabola, please find the vertex, focus, and directrix.
   III. as an ellipse, please find the center, a and b, vertices, and foci.
   IV. as a hyperbola, please find the center, vertices, foci, and also graph the asymptotes.

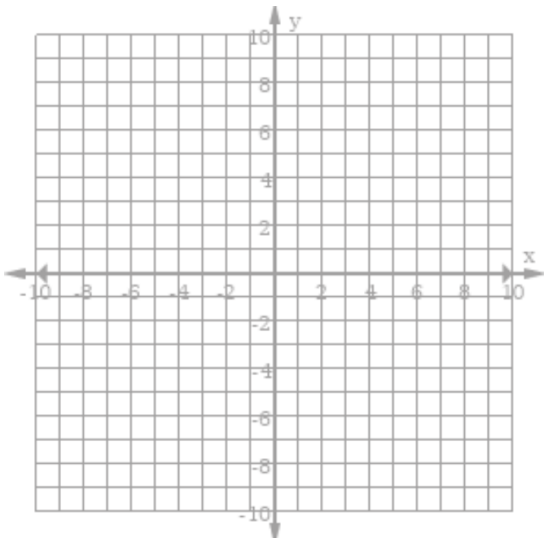
   a. $y^2 + 6y - 2x + 5 = 0$



   b. $x^2 + y^2 - 24 + 4y = 4$



c. $16x^2 - 64x + 9y^2 + 108y = -244$



d. $4x^2 - 16x - 9y^2 + 18y = 29$