Mat 110 Practice Exam II Name:_____

1. Evaluate the following given that $f(x) = \sqrt{2-x}$ and $g(x) = 3x + 4$ (10 pts)

   i. $(f+g)(x) =$_____

   ii. Domain of $(f+g) =$_____

   iii. $(f-g)(2) =$ _____

   iv. $\left(\frac{f}{g}\right)(x) =$ _____

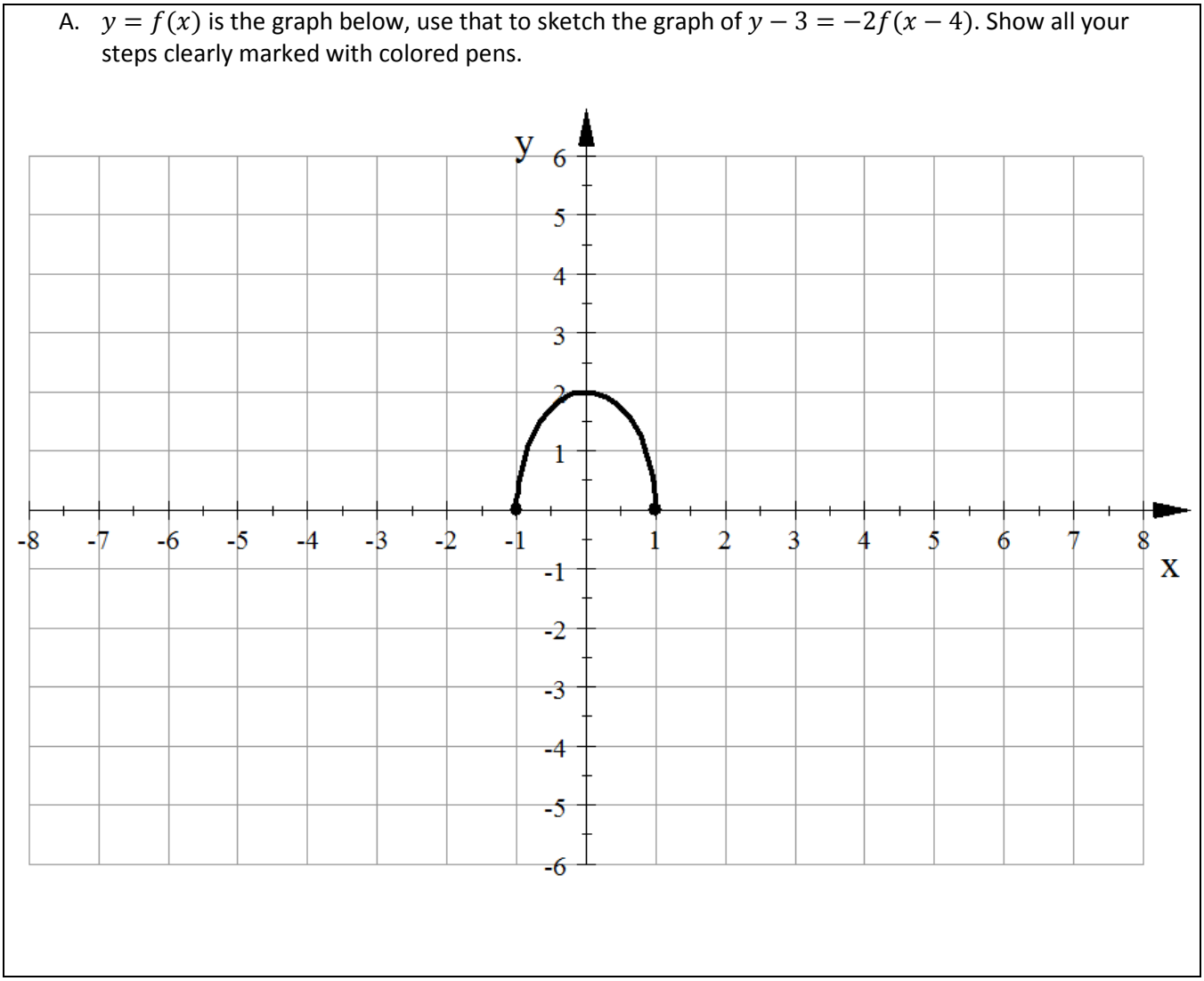
   v. Domain of $\left(\frac{f}{g}\right) =$ _____

   vi. $(f \circ g)(x) =$_____

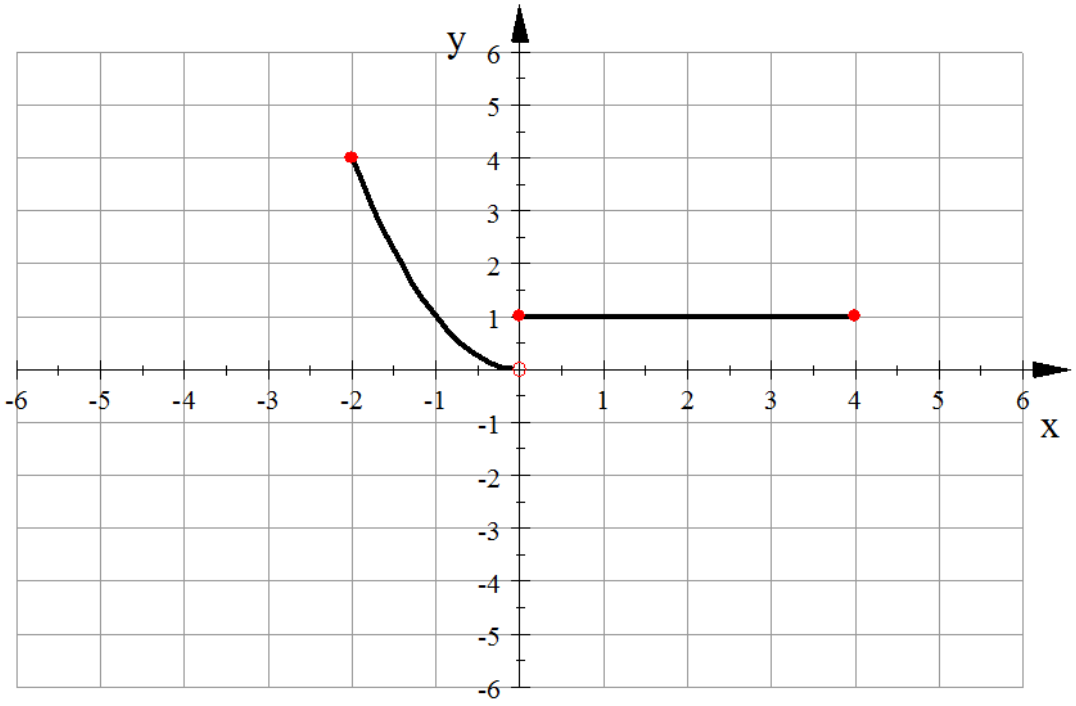
   vii. Domain of $(f \circ g)(x) =$_____

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

   A. $y = f(x)$ is the graph below, use that to sketch the graph of $y - 3 = -2f(x-4)$. Show all your steps clearly marked with colored pens.



B. $y = g(x)$ has the graph below, use that to find the graph of $y = g(-x)$.



3. Sketch the graph of the functions below. For graphs that have vertical asymptotes, please plot at least two points on either side of them. For a parabola show one point on either side of the vertex. Please show all your work and clearly show relevant points.

A. $f(x) = log_3(x + 1) - 2$

Vertical Asymptote: _____

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

Horizontal Asymptote: _____

C. $y = -(x-1)^2(x+1)^3(x-2)(x+2)$

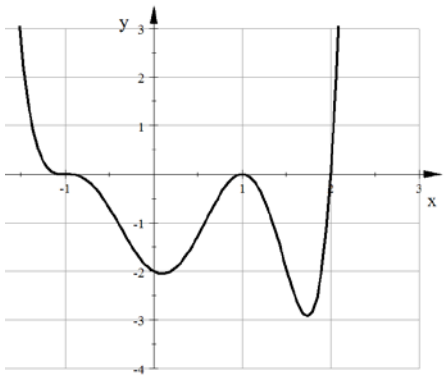
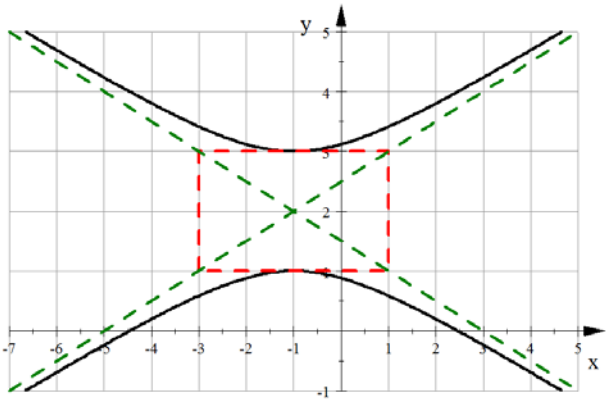
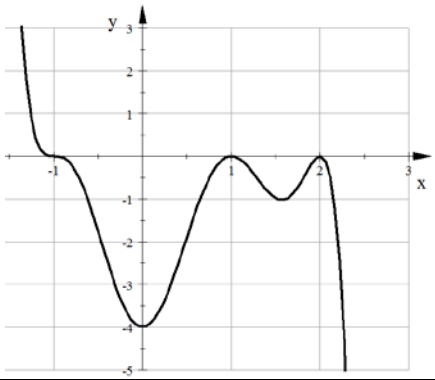
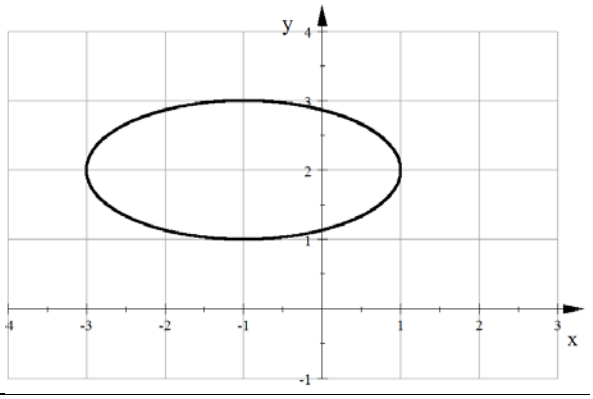
x-intercepts_____ y-intercepts_____

D. $y = 3x^2 - 12x + 13$

x-intercepts_____ y-intercepts_____ Focus: _____ Vertex: _____

4. Match each relation to its appropriate graph. If there is no match, please state so.

1. Match all the quantities in Column B that are equivalent to quantities in Column A. Some of the column B quantities may not have any corresponding items in column A, but all items in column A have at least one or more corresponding items in column B.

Column A	Answer	Column B
i. $y = -(x-1)^2(x+1)^3(x-2)^2$		
ii. $\frac{(x+1)^2}{4} + (y-2)^2) = 1$		
iii. $y = (x-1)^2(x+1)^3(x-2)$		
iv. $-\frac{(x+1)^2}{4} + (y-2)^2) = 1$		

5.

6. Identify the conic section. 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, major and minor axis, vertices, and foci.
   IV. as a hyperbola, please find the center, vertices, foci, and asymptotes.

A. $4x^2 = -8x + 10y - y^2 + 71$	B. $-\frac{5}{2}y^2 + 10y + \frac{1}{2} = x$
C. $4x^2 + 16x + 9y^2 + 18y = 119$	D. $-\frac{(x-5)^2}{16} + \frac{(y-1)^2}{25} = -1$