

**Intro to Calculus Test 2 Mr. Holcomb 2008/2009**

**Best kind of cookie:** \_\_\_\_\_

**Problem**

**Determine if the following functions are odd, even, or neither. Support your conclusion with clear and complete work.**

1. (5 points)  $f(x) = \frac{2x^3 - x^2}{x^2 - 5}$

2. (5 points)  $g(x) = \frac{\sqrt[3]{x^2}}{x^3 + 7x}$

**Determine if the following equations represents functions of  $x$  by isolating  $y$ . Justify with clear and complete work.**

3. (5 points)  $\frac{x^2 + 3}{y} + y^2 = 0$

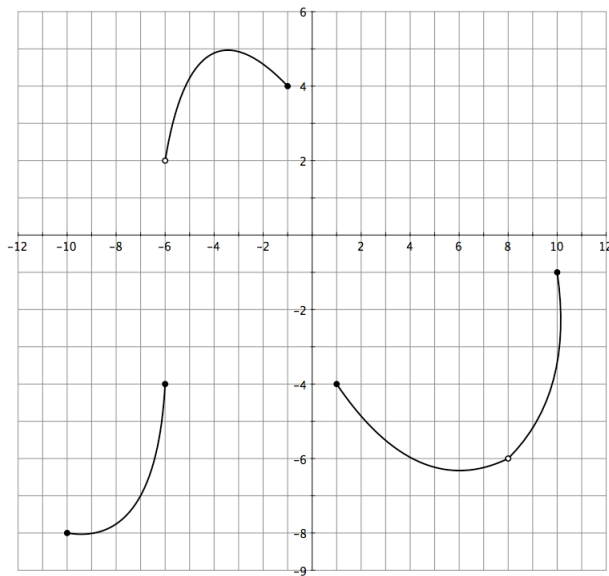
4. (5 points)  $2(x-1)^2 + (y+3)^2 = 16$

Find the domain of the following functions. Express the domain using interval notation if appropriate.

5. (5 points)  $h(x) = \sqrt{x+3} + \frac{x}{x^2-4}$  Justify.

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6. (5 points)



Evaluate the following functions using:

$$f(x) = x^2 - 1$$

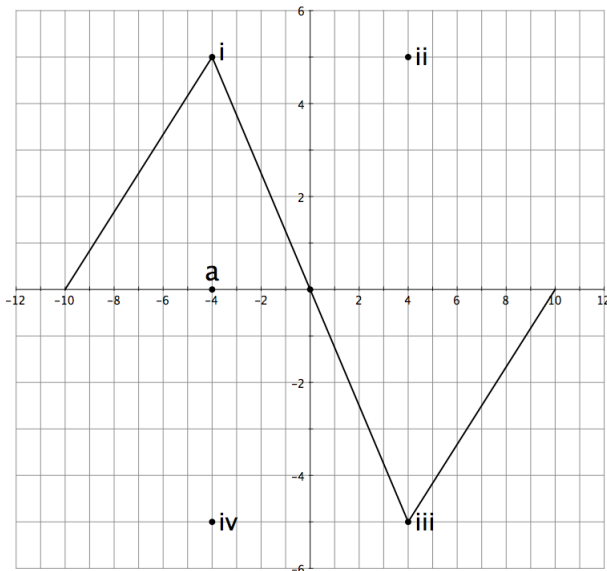
$$g(x) = \sqrt{x-2}$$

$$h(x) = \frac{x^2 + 1}{2}$$

7. (3 points)  $f(g(x))$

8. (3 points)  $h(f(x))$

9. (8 points) The graph below show function  $f$  and point  $a$  on the  $x$ -axis. It also shows four other points (i, ii, iii, iv). Fill in the blanks so that the points correspond.

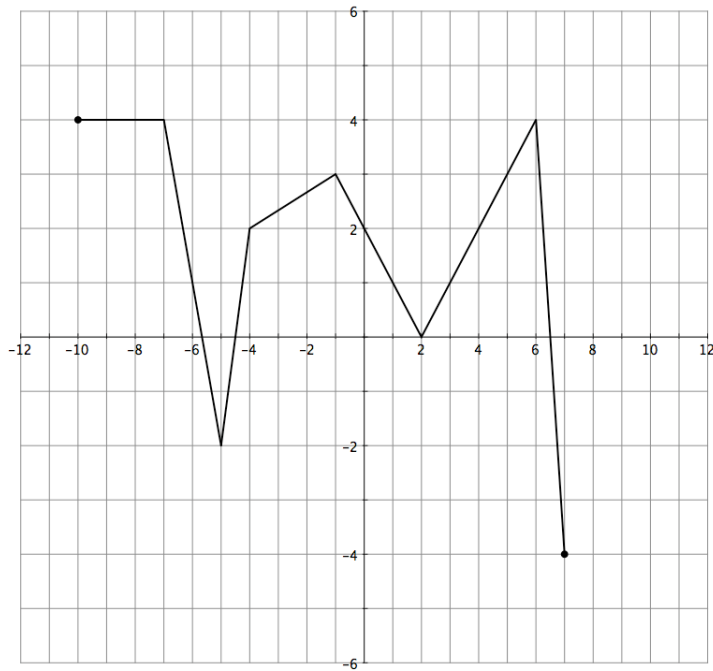


a)  $(-a, f(a))$  \_\_\_\_\_      b)  $(a, f(a))$  \_\_\_\_\_      c)  $(a, -f(a))$  \_\_\_\_\_

d)  $(-a, -f(a))$  \_\_\_\_\_      e)  $(a, f(-a))$  \_\_\_\_\_      f)  $(-a, f(-a))$  \_\_\_\_\_

g)  $(-a, -f(-a))$  \_\_\_\_\_      h)  $(a, -f(-a))$  \_\_\_\_\_

The entire graph of the function  $f$  is shown below. Use the graph below to answer questions \_\_\_ to \_\_\_.



10. (8 points) Find the approximate numerical values of the following:

a.  $f(6)$

b.  $f(-7) + f(4)$

c.  $f(-1)(f(-4) + 3)$

d.  $f(-2) + (-f(3))$

.

11. (14 points) Find all of the values of  $x$  such that:

a.  $f(x) = 2$

b.  $f(x) > 3$

c.  $f(x) = f(x+4)$

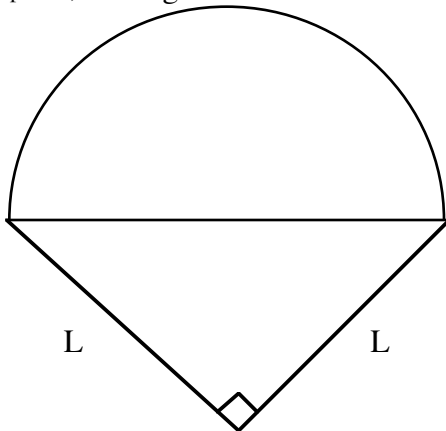
d.  $f(x) + 1 = f(x+3)$

e.  $f(x+1) = f(x-1)$

d.  $f(x) = f(-x)$

d.  $f(x) = -f(-x)$

12. (12 points) The figure below is an isosceles right triangle with a semicircle attached.



- a. Show that the area of the figure is approximately 5.1 square cm when  $L = 2$  cm.
- b. Show that  $L$  is approximately 3.9 cm when the area of the figure is 20 square cm.
- c. Express the distance  $L$  as a function of the area of the figure.