

## Algebra 2 Chapter 3 Review Worksheet

Name: \_\_\_\_\_

Only basic calculators are allowed.

1. If  $f(x) = 3 + x^2$ ,  $g(x) = 3x - 4$ , and  $h(x) = \sqrt{x-1}$ , do the following (they are 1 point each):

a)  $f(3)$                                       b)  $g^{-1}(5)$                                       c)  $(f+h)(5)$                                       d)  $f(g(-2))$

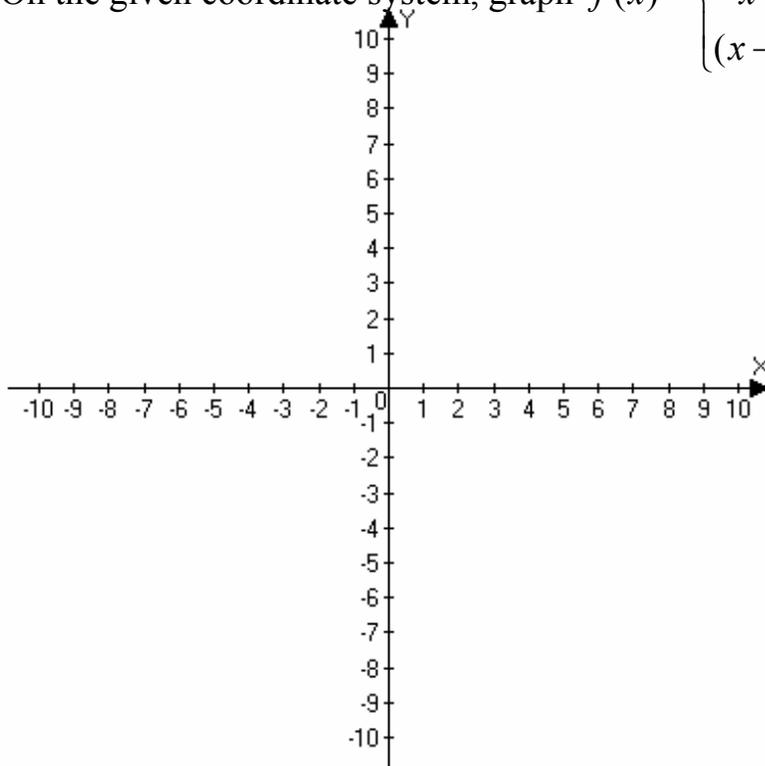
e)  $\left(\frac{g}{h}\right)(6)$                                       f)  $f(g(x))$                                       g) Find  $x$  if  $f(h(x)) = 11$

h) Honors: What is the domain of  $f(h(x))$ ?

i) Find  $f(g(x^2 + y))$

2. Making an appropriate coordinate system, graph a function whose domain is  $0 \leq x \leq 5$  and is increasing for  $0 \leq x \leq 3$ , decreasing for  $3 \leq x \leq 5$  and has an average value of  $-2$  for  $1 \leq x \leq 4$ . Please label the coordinates of the key points on the graph.

3. a) On the given coordinate system, graph  $f(x) = \begin{cases} -3x & \text{if } x < -3 \\ x+1 & \text{if } -3 \leq x \leq 4 \\ (x-2)^2 & \text{if } x > 4 \end{cases}$



b) Solve  $f(x) = 10$

4. a) Complete the table such that  $g(x)$  is an one to one function

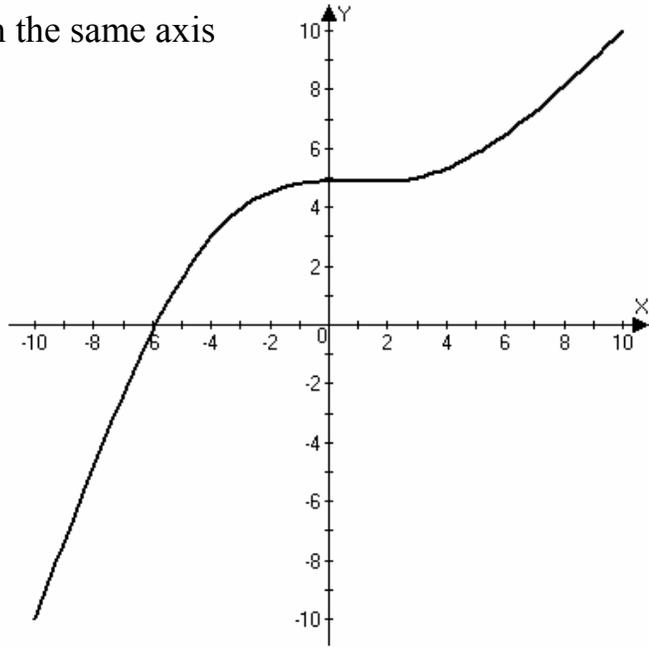
$x$	-2	-1	0	1	2
$g(x)$					

b) If  $f(x) = \sqrt{2x-1}$ , find the formula for  $f^{-1}(x)$

c) Give the domain and range for  $f^{-1}(x)$  in # 5b (hint: you do not need the formula of  $f^{-1}(x)$  to do this, use correct notation) **This is a honors level question**

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

d) Use the graph of  $f(x)$  to graph  $f^{-1}(x)$  on the same axis



5. a) Does  $f(x) = -2x^2 - 8x - 5$  have a maximum value or a minimum value? Explain why

b) Find the maximum or minimum value

6. Honors: Give the equation (in any form) of a parabola with vertex  $(2, -8)$  and passes through  $(-6, 56)$

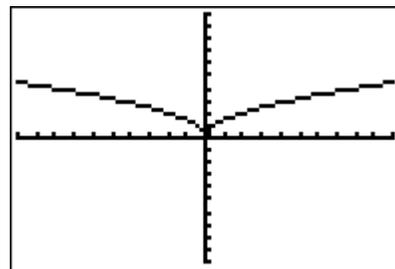
7. When a drug is taken orally, the concentration  $C(t)$  of the drug in the patient's blood stream changes over time. Let  $C(t)$  be measured in mg/L while  $t$  is in seconds.

a) Using correct units, explain what  $C(20)$  represents

b) Using correct units, explain what  $C^{-1}(2.8)$  represents

c) Using correct units, explain what the  $x$ -intercept of  $C(t)$  represents?

8. Given the graph to the right as  $f(x)$ , match the following graphs with the following equations:

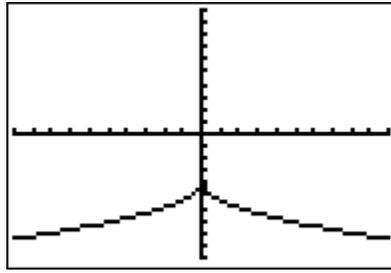
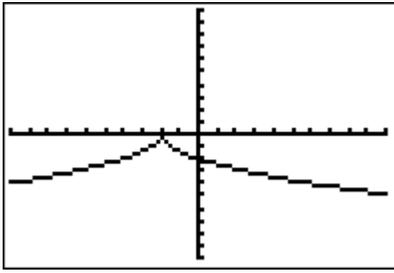
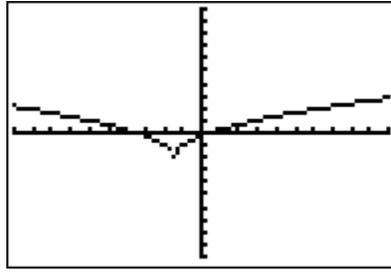
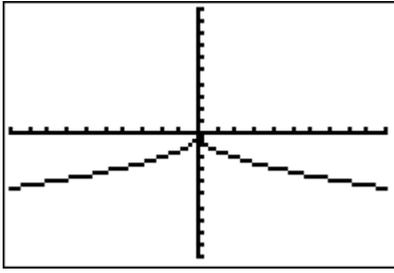


a)  $-f(x+4)$

b)  $f(x+3) - 4$

c)  $-f(x)$

d)  $-f(x) - 8$



Answers to the Ch 3 Review Worksheet:

1. a) 12    b) 3    c) 20    d) 103    e)  $\frac{14\sqrt{5}}{5}$     f)  $9x^2 - 24x + 19$     g) 9  
     h)  $x \geq 1$     i)  $3 + (3x^2 + 3y - 4)^2 = \dots$
2. Lots of possible answers
3. regular will have only 2 parts on test, honors can get 3 parts
4. a) don't repeat y's    b)  $f^{-1}(x) = \frac{x^2 + 1}{2}$     c) D:  $[0, \infty)$     R:  $[\frac{1}{2}, \infty)$     d) reflect over  $y = x$
5. a) max because -2 makes parabola open down  
     b) 3
6.  $y = 1(x - 2)^2 - 8$
7. a) mg/L concentration of drug in blood stream after 20 secs  
     b) the time in seconds when the concentration is 2.8 mg/L  
     c) the time in seconds when the concentration in the blood stream is 0 mg/L
8. c    b  
     a    d