

# CHAPTER 1 TEST

No calculators, no cell phones, organic brain activity only.

Math 231  
September 19, 2008

Name: \_\_\_\_\_  
By printing my name I pledge to uphold the honor code.

1. Fill in the blanks with points in coordinate notation, given that the the point  $(2, 3)$  is on the graph of  $f(x)$ .

\_\_\_\_\_ is on the graph of  $f(x + 2)$

\_\_\_\_\_ is on the graph of  $f(3x)$

\_\_\_\_\_ is on the graph of  $f(x) + 2$

\_\_\_\_\_ is on the graph of  $3f(x)$

\_\_\_\_\_ is on the graph of  $f^{-1}(x)$

\_\_\_\_\_ is also on the graph if  $f$  is odd

2. Complete each of the following definitions.

A function  $f$  is an *even function* if:

A function  $f$  is a *power function* if:

A function  $f$  is *one-to-one* if:

3. Assuming that  $f$  is a linear function, deduce the missing values in the table.

$x$	1	3		7	
$f(x)$	0	-6	-9		-24

4. Use the values given in the table to deduce the missing values.

$x$	$f(x)$	$g(x)$	$(f - g)(x)$	$(f \circ g)(x)$
1	1	2		
2	3		2	
3		3		2

5. What types of functions are these? Circle ALL that apply for each function. Circle NONE if none of the options apply.

$f(x) = 3^x$       algebraic / power / polynomial / rational / linear / NONE

$g(x) = 42\pi^3 - x$       algebraic / power / polynomial / rational / linear / NONE

$h(x) = \frac{x^2 - 1}{\sqrt{x + 1}}$       algebraic / power / polynomial / rational / linear / NONE

$k(x) = 3x^5 + 2x^{-1}$       algebraic / power / polynomial / rational / linear / NONE

6. The graph of a function  $f$  is given below. List the appropriate information (write NONE if none exist). Be sure to use interval notation for the last three parts.

domain of  $f$ :

asymptotes of  $f$ :

local minimums occur at:

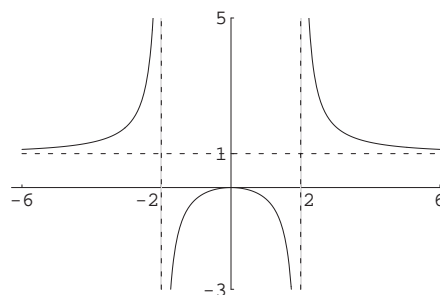
local maximums occur at:

global maximums occur at:

$f$  is positive here:

$f$  is negative here:

$f$  is concave up here:



7. Given the function  $f(x) = \frac{\sqrt{x+1}}{4-x}$ , find the following.

$f(3) =$

$f(x+1) =$

Domain( $f$ ) =

( AROC of  $f$  on  $[0, 3]$  ) =