Honors Pre-Calculus Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 1 – Study Guide Block: \_\_\_\_\_\_\_\_\_\_

**Please show all work on a separate sheet of paper! Write your answers ONLY on this sheet!**

1. If *f(x)* contains the coordinate (2,-3), give the coordinate that would have the following relationship to *f(x)*.

a. *f(x)* is even: b. *f(x)* is odd: c. *f-1(x)*:

2. State the domain in interval notation. Justify your answer algebraically, but confirm it using a graphing calculator.

a) b) c) d)

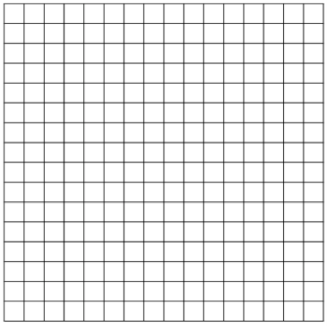
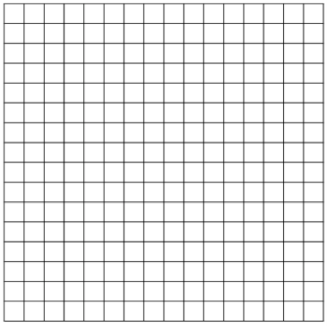
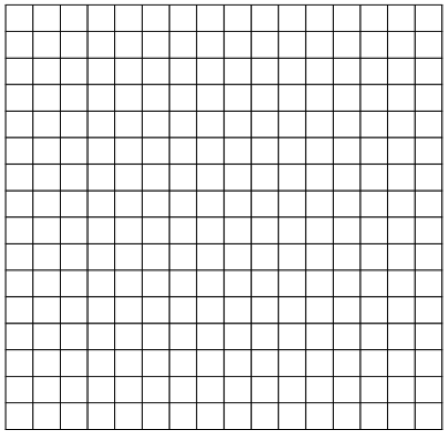
3. Determine if the function is even, odd or neither. Justify your answer algebraically, but confirm it using a graphing calculator.

a) b) c)

4. Given: , and , find each of the following. Be sure to state any excluded values when appropriate.

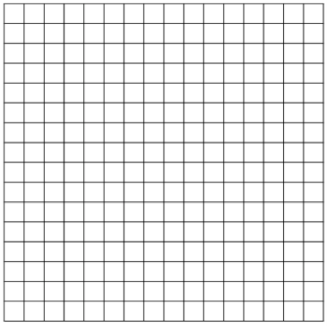
a) b) c) d)

5. Given: a) Graph



Evaluate

b)



c)

d)

6. Use the given function to answer the questions that follow:

a) State the domain in interval notation.

b) State the range in interval notation.

c) State the interval(s) where *f(x)* is increasing.

d) State the interval(s) where *f(x)* is decreasing.

e) State the interval(s) where *f(x)* is constant.

f) Is *f(x)* a function? Justify your answer.

g) State at what x-values the function is discontinuous. For each answer, describe the type of discontinuity.

7. Name the function and describe each transformation.

a) c)

b) d)

8. Complete each sentence:

a) Even functions have symmetry about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b) Odd functions have symmetry about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

c) Inverse functions have symmetry about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. Given , write the equation of if

10. Find the value of *c* that would make *f(x)* continuous.

11. Use compositions of functions to prove whether and are inverses.

12. Given , find:

a) Increasing interval(s)

b) Decreasing interval(s)

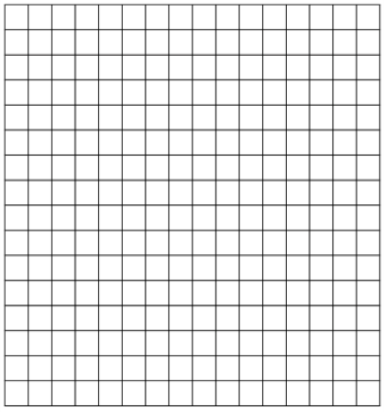
c) Local maximum(s)

d) Local minimum(s)

e) Zero(s)

13. Find of each:

a) b)

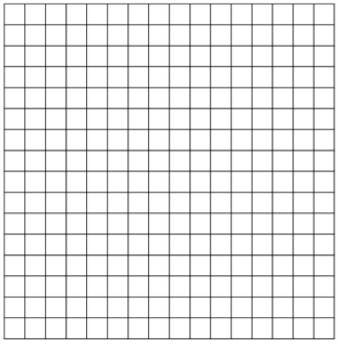


14. If f(x) is graphed below, graph g(x) = 2f(x) – 3 using a different color.

15. To get the function g(x), we start with the function f(x), reflect it horizontally, shrink it horizontally by a factor of 1/3, and shift it down 3. Find g(x) in terms of f(x).

16. a) If (f/g)(x) = 2x and g(x) = 4x2, what is f(x)? b) If f(g(x)) = √(x2 + 4), and f(x) = √x, what is g(x)?

c) If f(g(x)) = (3x2)3, what could f(x) and g(x) be?



17. Does the following function have an inverse that is a function? Explain algebraically and graphically.

f(x) = 2x4 - 3

18. Graph the following function:

