**3.1-3.6: Functions and Graphs Make-up Assignment**

1. For the function  evaluate.



2. Compute the difference quotient for the function . Difference quotient for a function *g* is *g(x+h)-g(x)*

*h*

3. Determine the domain of the following functions.

a)  b) 

c)  d) 

4. For the greatest integer function compute the following.

a)  b)  c) 

5. Determine the vertex and *x-*and *y-*intercepts of the given quadratic function, and sketch a graph.

a)  b) 

6. Complete the following table by converting functions into different forms.

(show work is space provided below)

|  |  |  |
| --- | --- | --- |
| Transformation | Polynomial | x-Intercept |
| a) |  | b) |
| c) | d) |  |

a) b) c) d)

7. A field bounded on one side by a river is to be fenced on three sides to form a rectangular enclosure. If the total length of fence is 200 feet, what dimensions will give an enclosure of maximum area? (Must use equations to solve: substitute one equation into another and then use the vertex formula to solve!)

8. Describe the sequence of transformations **in order** that transform the graph of the parent function *f* into the graph of the function *g*. **Do not graph the functions**.

a)  b) 

*f(x)=|x| f(x)=[x]*

*c)*  d) 

9. Graph each function and its parent function on the same graph. Be sure to show all shifts, stretches, and reflections.

a)  b) 

c)  d) 

10. If and ;

a) Write a rule for *f + g*, and *f - g* b) Find the domain of *f + g*, and *f - g*

c) Write a rule for *fg* and . d) Find the domain of *fg* and .

11. If and .

a) Find  b) 

c)  d) 

12. As a spherical weather balloon is inflated, its radius increases at the rate of 4 cm per second (Think: what does per mean in mathematical operations).

a) Express the surface area of the weather balloon as a function of time *(t)*. Hint the formula for surface area of a sphere is .

b) Find the surface area after 5 seconds.

13. Let  represent the inverse of.

|  |  |
| --- | --- |
| a) Complete the table | b) Use the ordered pairs in a) to sketch a graph of  and  on the same coordinate plane. Be sure to label both functions. |

|  |  |
| --- | --- |
| *x* |  |
| -7 |  |
| -1 |  |
| 1 |  |
| -1 |  |
| -7 |  |

|  |  |
| --- | --- |
| *x* | *f(x)* |
| -2 | -7 |
| -1 | -1 |
| 0 | 1 |
| 1 | -1 |
| 2 | -7 |

14. The graph of a function *f* is given. Sketch the graph of its inverse, and givethe coordinates of 3 points on the inverse.



15. Write a rule for the inverse of the given function.

a)  b) 

c)  d) 

16. Use composition to show that *f* and gare inverses of each other.

a)  b) 