*Review 6.2-6.3*

1. Logarithm: = if and only if = ; *b* > 0, *b* ≠ 1, *x* > 0

 Example: = is equivalent to =

 Log reading hint: "start at base and read counterclockwise" =

 Rewrite in exponential form.

 a. = b. = 1/2

2. Rewrite in logarithmic form.

 a. = 125 b. =

3. Evaluate.

 a. b. [recall = ] c. [recall log definition]

4. Inverse function of Exponential function is the Logarithmic function:

 Let ) =

 =

 = = if and only =

 Logarithmic function: ) = for > 0, > 0, ≠ 1

 For each function, find its inverse.

 a. ) = b. ) =

5. Graphs of logarithmic functions: if *b* > 1, graph increasing; if 0 < < 1, graph decreasing

 For each function, complete the table and graph the function.

 a. ) =

|  |  |
| --- | --- |
| *x* | *y* |
| 1 |  |
| 3 |  |
| 9 |  |
| 1/3 |  |
| 1/9 |  |

 

 b. ) =

|  |  |
| --- | --- |
| *x* | *y* |
| 1 |  |
| 3 |  |
|  |  |
| 1/3 |  |
| 1/9 |  |

 

6. Find the domain.

 a. b. c.

7. For each logarithmic function, find the corresponding transformations.

 a. ) = b. ) =

 c. ) = d. ) =

8. Evaluate and round your answer to 3 decimal places where needed. *Hint: Use the* © *key.*

 a. b. c. d.

9. Exponential growth and decay: = Note: is equivalent to "" on =

 = initial value (that is, population at time = 0);

 = continuous growth or decay rate (expressed as decimal)

 = growth or decay factor

 = time

 Find the initial value, the continuous growth or decay rate, and the growth or decay factor.

 a. *P*(*t*) *=* b. *N*(*t*) *=*

10. Ronald bought a sport utility vehicle in 2009, which unfortunately started losing its value as soon as he drove off the lot. Ronald's SUV's value can be modeled by the function *V*(*t*) *=* 21305, where *t* represents years after 2009.

 a. Find and interpret *V*(0).

 b. Find *V*(5). Round your answer to the nearest dollar. Interpret your answer.

 c. After what year will the SUV's value drop to $5,338? Solve graphically.