

Math153.02

Date:

Name:

Score:

Exam 1
(Review & Sections 5.1 & 5.2)

1. Evaluate the expression. Round your result to three decimal places.

a. 8^{2p} _____

b. $e^{-3/4}$ _____

c. $\left(\frac{3}{2}\right)^{-1.5}$ _____

2. Graph the following functions. Make a table for the points that you are using. Give the domain, the range, and the horizontal and vertical asymptotes.

a. $y = 3^x - 2$

<i>x</i>					
<i>y</i>					

b. $y = \log_3 x$

<i>x</i>					
<i>y</i>					

3. Use the graph of f to describe the transformation that yields the graph of g .

a. $f(x) = -2^x$, $g(x) = 5 - 2^x$

b. $f(x) = \left(\frac{3}{5}\right)^x$, $g(x) = -\left(\frac{3}{5}\right)^{x+4}$

4. Which of the following functions are exponential? If the function is not exponential, state what type of function it is.

a. $3x$

b. $3x^2$

c. 3^x

d. 2^{-x}

5. What is the inverse of the function $f(x) = 10^x$?

6. Graph $f(x) = 10^x$ and its inverse on the same coordinate plane.

7. Evaluate the following logarithms.

a. $\log_2 64$ _____

b. $\log .00001$ _____

c. $\ln e^{2x}$ _____

8. Find the compound amount for \$7000 invested for 5 years at 12% compounded monthly. ($A = P(1 + \frac{r}{n})^{nt}$)

9. Find the compound amount for \$7000 invested for 5 years at 12% compounded continuously. ($A = Pe^{rt}$)

10. Explain how the results from questions 9 and 10 above compare.

11. **Radioactive Decay** Let Q represent a mass of carbon $14(^{14}C)$ (in grams), whose half-life is 5730 years. The quantity of carbon 14 present after t years is

$$Q = 10\left(\frac{1}{2}\right)^{t/5730}$$

a. Determine the initial quantity (when $t = 0$).

b. Determine the quantity present after 2000 years.

c. Sketch the graph of this function over the interval $t = 0$ to $t = 10,000$.