

Math153.02

Date:

Name:

Score:

Exam 2 (Chapter 5)

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

a. $3^{3^{1/2}}$ _____

b. $e^{-7/10}$ _____

2. Perform the following conversions.

a. Convert $4^{-2} = \frac{1}{16}$ to the equivalent logarithmic form _____

b. Convert $\ln(11) = 2.398$ to the equivalent exponential form _____

3. Construct a table of values, and then sketch the graph the following functions. Give the domain, the range, and the horizontal and vertical asymptotes.

a. $y = -3^{-x} - 2$

<i>X</i>					
<i>Y</i>					

b. $y = \log(x-1)$

<i>X</i>					
<i>Y</i>					

4. Use the properties of logarithms to express the following as a sum, difference, or multiple of logs.

$$\ln \frac{5\sqrt{x}}{6}$$

5. Rewrite the expression as the logarithm of a single quantity.

$$3\log_5(x) + \frac{1}{3}\log_5(y) - 2\log_5(z)$$

6. Solve the following logarithmic equations algebraically. Approximate your result to three decimal places if necessary.

a. $\log_{10} x - \log_{10}(8 - 5x) = 2$

b. $\ln(x - 1) = \ln(x - 2) + \ln(x + 2)$

7. Solve the following exponential equations algebraically. Round the results to three decimal places if necessary.

a. $3^{(x-4)} = 9^{(x+3)}$

b. $e^{2x} = 35$

8. Determine the value of the expressions **WITHOUT** the use of a calculator.
- a. $\ln(e^x) + \log_2(64) =$ b. $\log_7(5) - \log_7(35) =$
9. Use your calculator and the change of base formula to evaluate the following expression. Approximate your results to three decimal places if necessary.
- a. $\log_{24} 68$ _____ b. $\log_8(60)$ _____
10. The population of a town is modeled by $P = 12,620e^{0.0118t}$ where $t = 0$ represents the year 2000. According to this model, when will the population reach 19000?
11. A deposit of \$10,000 is made in a saving account for which the interest is compounded continuously. The balance will double in 8 years. ($A = Pe^{rt}$)
- a. What is the annual interest rate for this account?
- b. Find the balance after 2 years.
12. Explain how the results from questions 9 and 10 above compare.