MAT 1053 - MODULE 5.2 PRE-CLASS WORK

myUTSA ID: _____

MODULE 5.2 - LOGARITHMIC FUNCTIONS

LEARNING OBJECTIVES

In this section, you will:
- Convert from logarithmic to exponential form.
- Convert from exponential to logarithmic form.
- Evaluate logarithms.
- Use common logarithms.
- Use natural logarithms.

CONVERTING FROM LOGARITHMIC TO EXPONENTIAL FORM

- State the definition of the logarithmic function.

How To... Given an equation in logarithmic form $\log_b x = y$, convert it to exponential form.

EVALUATING LOGARITHMS

How To... Given a logarithm of the form $y = \log_b x$, evaluate it mentally.

USING COMMON LOGARITHMS

- State the definition of the common logarithm

USING NATURAL LOGARITHMS

- State the definition of the natural logarithm

MODULE 5.2 – CLASS EXAMPLES

Write the following logarithmic equations in exponential form.

   1. $\log_5(25) = 2$ 2. $\log(1{,}000{,}000) = 6$

Write the following exponential equations in logarithmic form.

   3. $3^2 = 9$ 4. $2^{-1} = \frac{1}{2}$

Solve the following

   5. $\log_{121}(11) = x$ 6. $\log_2\left(\frac{1}{32}\right) = y$ 7. $\log_4\left(\sqrt[7]{4}\right) = z$

   8. $\log_3(-9) = t$ 9. $\log_{14}(1) = x$ 10. $\log_2(4) = w$

   11. $\log(1000) = w$ 12. $\log(100^8) = x$ 13. $10^{\log(31)} = z$

   14. $\ln(500) = y$ 15. $\ln(e^4) = d$ 16. $e^{\ln(1537)} = u$

For the following, solve for x by converting the logarithmic equation to exponential form

   17. $\log_2(x) = -3$

For the following exercises, evaluate the base b logarithmic expression without using a calculator.

   18. $\log_2\left(\frac{1}{8}\right) + 4$ 19. $6 \cdot \log_8(4)$