Pre Calculus
Study Guide: Unit 11

NON-CALCULATOR PORTION:

1) Evaluate or simplify the expressions below using properties of exponents.

(a) $343^{\frac{2}{3}} \cdot 64^{-\frac{1}{3}}$

(b) $\left(\frac{2x^{\frac{3}{2}}y^2 z^{\frac{5}{4}}}{x^2 z} \right)^4$

2) Express each expression in the form listed below.

(a) $\sqrt[3]{27a^6 b^{12}}$; rational exponents

(b) $m^{\frac{1}{2}} n^{\frac{2}{3}}$; radical

3) Write $5^4 = 625$ in logarithmic form.

4) Write $\log_4 2 = \frac{1}{2}$ in exponential form.

5) Solve for the indicated variable.

a) $\ln 48 - \ln w = \ln 6$

b) $\log_7 x = \frac{1}{2}\log_7 9 + \frac{1}{3}\log_7 27$

c) $\log_4(x - 3) + \log_4(x + 3) = 2$

6) Given that $\log 4 = 0.6021$, $\log 20 = 1.3010$. Evaluate $\log 500$.

7) Set-up the change of base formula for $\log_{\frac{1}{4}} 10.7$

CALCULATOR PORTION:

8) Write the formula for the following:

a) Compounded continuously

b) Compound interest

c) Growth and Decay

9) You are going to invest your $30,000 savings for 25 years into a money market that earns 12.5% interest compounded weekly or into a savings account that earns 8.5% interest compounded continuously. Which option would you choose and why?

10) Mrs. Kat sold her laptop for $500 in 2016. However, the laptop depreciated by an annual rate of 17% each year. How much did her laptop originally cost in 2011?

11) Solve each equation or inequality

a) $6^{x-1} < 8^{2-x}$

b) $-e^{6-9x} + 5 = -48.4$

12) Graph each exponential function or inequality. Identify the parent and describe the transformations from the parent. State the asymptote.

a) $y = 2\left(\frac{1}{3}\right)^{x-2} - 2$

b) $y \le 5^{-x} + 1$