

Name: _____

Directions: Complete all questions and **show all applicable work.** Partial credit will be given. All questions are equally weighted (11pts each).

1.) Solve the equation for x :

$$2^x = 32$$

2.) Solve the equation for x :

$$\log_5 x = 3$$

3.) Evaluate $\log_3 \frac{1}{27}$. You must show your work to receive credit, no calculators.

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4.) Solve the equation for x :

$$3^{4-x} = 5$$

5.) Simplify: $3 \log_5(5^{2x-1})$.

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6.) First plot

$$f(x) = 2^x,$$

then on a new graph using translations plot

$$f(x) = 2^{-x} + 1.$$

Explain what translations were used.

7.) You invest \$4000 in a mutual fund that pays 8% yearly interest, disbursed quarterly. If the interest money is reinvested back into the fund each quarter, how long until the value of the loan reaches \$5000?

Note: $A = P(1 + \frac{r}{n})^{nt}$

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8.) Write the following in expanded form:

$$\log_2 \left(\frac{8(2+x)}{x(x-5)^7} \right)$$

9.) Solve the following for x :

$$2 \log_5 4x - \log_5 2x = \log_3(9)$$