

Name _____

Homework 6

Exp/Log Equations and Applications

1. (7) Solve the equation $e^{5x+6} = 8e^{3x}$. Give both the exact solution, and an approximation to the nearest 0.001.

2. (6) Determine the solution(s) to the equation $\log_6(1-x) + \log_6(2-x) - 1 = 0$.

3. (6) A company predicts that the demand D (in number of units) for an item is modeled by the function $D(t) = 4000 + 1500 \ln(2t + 1)$ where t is weeks after a new ad campaign begins. After how many weeks is demand predicted to reach to 9000 units?

4. (7) Find the exact solution(s) to the equation $\log(2x + 1) + 3 = 5 + \log(3 - x)$.

5. (6) An investment offers 6% annual interest, compounded quarterly. How long will it take the investment to reach triple its initial value?

6. (2,6) A certain population grows according to the function $P(t) = \frac{1800}{2 + 4 \left(\frac{3}{2}\right)^{-t/5}}$ where t is measured in months.

(a) What is the initial population?

(b) How long will it take for the population to reach 500?