MAT 171 Homework Section 4.4: Exponential and Logarithmic Equations

Name: _____

Solve each exponential equation for x.

1) $5^x = 125$

2) $2^{2x-1} = 32$

3) $32^x = 8$

4) $3^{1-x} = \frac{1}{27}$

5) $e^{x+1} = \frac{1}{e}$

Solve each exponential equation. Express the solution set in terms of natural logarithms or common logarithms. Then use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

6) $10^x = 3.91$

7) $5^x = 17$

8) $5e^x = 23$

9) $e^{1-5x} = 793$

10) $7^{0.3x} = 813$

Solve each logarithmic equation. Be sure to state any x value that is not in the domain of the original logarithmic expressions. Give the exact answer. Then, where necessary, use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

11) $log_3 x = 4$

12) $lnx = 2$

13) $log_4(3x + 2) = 3$

14) $5ln(2x) = 20$

15) $log_5 x + log_5(4x - 1) = 1$

16) $log_3(x + 6) + log_3(x + 4) = 1$

17) $log_2(x + 2) - log_2(x - 5) = 3$

18) $2logx = log25$

19) $log(x+4) - log2 = log(5x+1)$

20) $logx + log(x+3) = log10$

21) If \$8,000 dollars is invested at an annual interest rate of 8%, compounded continuously, then how long would it take for the total accumulated amount to double the amount invested? (Round to one decimal place.)

22) If \$8,000 dollars is invested at an annual interest rate of 20.3%, compounded continuously, then how long would it take for the total accumulated amount to be \$12,000? (Round to one decimal place.)