Math 041 Assignment 3.4 Name:_____

DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems on an attached lined paper with clearly numbered problem solutions.

Problems 1-5. Use the One to One principle to solve the given equations.

1. **Solve** $2^{x-2} = 2^4$ **Ans**_____

2. **Solve** $2^{2x+1} = \frac{1}{4}$ **Ans**_____

3. **Solve** $3^{x^2+6} = 27$ **Ans**_____

4. **Solve** $\log_3(2x+1) = \log_3(x^2+2)$ **Ans**_____

5. **Solve** $\ln(1-3x) = \ln(x^2-5)$ **Ans**_____

Problems 1-5. Use the Cancellation Law to solve the given equations.

6. **Solve** $2^{x^2-4}=32$ **Ans**_____

7. **Solve** $e^{2x}=3e^{x}$ **Ans**_____

8. **Solve** $e^{2x}-5e^{x}=6$ **Ans**_____

9. **Solve** $\ln\left(x^2+3x\right)=\ln 2+\ln\left(x+1\right)$ **Ans**_____

10. The values y (in billions of dollars) of U.S. currency in circulation in the years 2000 through 2007 can be modeled by

$$y=-451+444\ln t,\quad 10\le t\le 17$$ Ans_____

where t represents the year, with t = 10 corresponding to 2000. During which year did the value of U.S. currency in circulation exceed $690 billion?