

EXAM 3
Math 105
April 11, 2008

Name _____

You must show all your work. Partial credit will be given.

1. A laptop computer currently costs \$787. The price of the laptop is expected to decrease by 2.9% per year. Find a mathematical model for the price of the computer. (8 pts)

2. The following table shows the aver wage per worker in radio broadcasting..

Years Since 1992	Annual Wages (dollars)
0	23500
1	24300
2	26000
3	27200
4	29300
5	31300
6	34200

Find the best polynomial model for this data. Use your model to predict in what year the wages of broadcast radio workers will reach \$38000. (8 pts)

3. Solve each of the following exponential equations. (5 pts each)

(a) $2.3 = 4(1.3)^x$

(b) $3(2.19)^t = 4(1.31)^t$

4. A new 2002 Jeep Grand Cherokee Laredo has a manufacturer's suggested retail price (MSRP) of \$25,665. A buyer gets an \$8500 credit for her trade-in and finances the balance of the price at her local bank with a 72-month, 8.99% loan. What is her car payment? (8 pts)

5. For each of the following logarithmic formulas rewrite the expression as a single logarithm. (5 pts each)

(a) $\ln(1) - \log(1) + \ln(x^2)$

(b) $2\ln(3x) - \ln((3x)^2) + 2\ln(3)$

6. The CREF Inflation-Linked Bond Fund has earned an average of 6.88% since May 1, 1997. Assuming that the account will earn an annual rate of 6.88% compounded monthly, what will the future value of an account with a present value of \$2500 be in 20 years if \$300 contributions are made monthly? (Write out the formula needed. You may use TVM to do the solving if you so desire.) (8 pts)

10. The amount of land in U.S. farms may be modeled by $F(t) = 115.1(0.9352)^t + 900$ million acres where t is the number of years since 1978. According to this model in what year will the amount of land in U.S. farms drop below 910 million acres? (8 pts)
11. A 3824-square-foot, six-bedroom, three-bath home in Queen Creek, Arizona, was advertised for \$302,691 in February 2005. A family finances 80% of the purchase price with a 5.75% loan. If the family makes \$1500 payments monthly, how long will it take them to pay of the loan? (8 pts)
12. The following table shows the amounts spent on reducing sizes of first-grade through third-grade public school classes in a certain state.

Year	Amount (millions)
1988	1
1990	4
1992	14
1994	37
1996	51
1998	66
2000	69
2001	71

Find a model for this data and explain *why* you chose that particular model. Use your model to predict the amount spent in 2006. (8 pts)