

HOMEWORK 6 - MATH 111

DUE DATE: Monday, November 14

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. The population of Kenya was 28.24 million people in 1994. Since then the population has been growing at a rate of 2.5% per year. What will be the population in the year 2010?
2. An oil well in Alaska is currently producing 15,000 barrels of oil per month, but the production in each month is 95% of the production in the previous month. What will be the monthly production from the well after 18 months?
3. Graph the exponential function $y = 5^x$ using the values at the points $x = -1, x = 0$ and $x = 1$. Then use transformations to obtain the graph of $y = 2 \cdot 5^{-x} + 3$.
4. If you deposit \$ 250 in a savings account earning 5% interest per year, how much will you have in the account after 12 years?
5. Suppose that the biological half-life of a drug is 10 hours. If the peak amount of the drug in the patient's body is 20 mg, what will be the amount of the drug in a patient's bloodstream 7 hours after the peak?
6. Roughly sketch the graph of the function $f(x) = e^x$. Then use transformations to obtain the graph of $f(x) = e^{x+1} - 2$.
7. A population of fruit flies in a laboratory jar began with 10 flies and has been increasing at a continuously compounding rate of 125% per day. After 1 week how many flies will be in the jar?
8. A Honda Accord bought for \$ 24,000 in 1995 has been losing value at a continuously compounding rate of 15% per year. What was its price in the used car market in 2004?