

Problem Set 3

Exponential Functions

Evaluate using a calculator

1) e^2

2) $\frac{1}{2}e$

3) $2e^{\frac{4}{3}}$

Graph the following functions

4) $y = 3^x$

5) $y = e^x - 1$

6) $y = 2e^x$

Growth Models (Show Work)

7) The current population of Germany is 80,000,000. What would be the population of Germany in 10 years if its population would growth at a steady rate of .9 % for 10 years?

8) The current population of Salem, Virginia is 25,000. What would be the population of Salem in 5 years if Salem would grow at a rate of 1.2 % per year?

9) Using the exponential growth formula, find the amount of money that you would have in a bank account if you deposited \$10,000 in the account for 10 years at 1.6 % interest rate?

10) A certain rabbit population is modeled by the equation $P = 2000e^{.03t}$ where t is the time in months. Use the model to predict the population after 20 months.

Decay Models

11) A certain population of Panda Bears in China has been decreasing by 1.2 percent per year. If this trend keeps up, what will be the population of Panda Bears in 10 years if there are currently 2000 bears?

12) A certain isotope decreases at a rate of 4% per year. If there is currently 220 grams of the isotope, how many grams of the isotope will there be in 25 years?