

3.1 Homework-Part 3: Using Functions Involving e

Simplify the expression.

1. $e^3 \cdot e^{-3}$	2. $\frac{1}{2}e^{-2}(2e^4)^3$	3. $\left(\frac{3e^3}{6e^2}\right)^{-2}$
4. $3e^x \cdot 2e^{4x}$	5. $\frac{e^3}{e^{x+3}}$	6. $\left(\frac{e^{4x-1}}{\sqrt{4e^{2x}}}\right)^3$

3.1 Homework-Part 4

Application Problems- Use the appropriate formula and answer each part.

7. In 1992, 1219 monk parakeets were observed in the United States. For the next 11 years, about 12% more parakeets were observed each year. <p>a) Write an exponential function showing the growth of the parakeets.</p> <p>b) In 1998, about how many parakeets were observed in the United States?</p> <p>c) In what year were 1712 parakeets observed?</p>
8. From 1990 to 2000, the population of California can be modeled by: $P = 29,816,591(1.0128)^t$ where t is the number of years since 1990. <p>a) What was the population in 1990?</p> <p>b) What is the growth factor?</p> <p>c) What is the annual percent increase?</p> <p>d) Estimate the population in 2007.</p>

9. The population of rabbits triple every **month**. There are 20 rabbits initially present.
- How many rabbits will be present after one **year**?
 - Approximately how long will it take for the population of rabbits to reach 10,000?

10. When John was born, his grandma opened an account that paid 6.5% interest compounded continuously. If his grandma initially invested \$1,000 and John is now 16, will he have enough money to make a \$2,500 purchase?

11. You deposit \$2200 in an account that pays 3% annual interest. After 15 years, you withdraw the money.
- What is the balance if the interest is compounded quarterly?
 - What is the balance if the interest is compounded continuously?

12. You want to have \$10,000 in your account after 5 years. Find the amount your initial deposit should be for each of the following described situations.
- The account pays 3.5% annual interest compounded monthly.
 - The account pays 2.75% annual interest compounded quarterly.
 - The account pays 4.25% annual interest compounded yearly.
 - Estimate the number of years it will take for the account to reach \$10,000 if your initial investment is \$5000 and the account pays 4% compounded biannually.