

Practice

Growth and Decay

COMMUNICATIONS For Exercises 1 and 2, use the following information.

Commercial non-music radio stations increased at an average annual rate of 3.1% from 1996 to 2000. Commercial radio stations in this format numbered 1262 in 1996.

Source: M Street Corporation, Nashville, TN

1. Write an equation for the number of radio stations for t years after 1996.

$$A = 1262(1.031)^t$$

2. If the trend continues, predict the number of radio stations in this format for the year 2006.

$$\approx 1712 \text{ radio stations}$$

3. **INVESTMENTS** Determine the amount of an investment if \$500 is invested at an interest rate of 4.25% compounded quarterly for 12 years.

$$\$830.41$$

4. **INVESTMENTS** Determine the amount of an investment if \$300 is invested at an interest rate of 6.75% compounded semiannually for 20 years.

$$\$1131.73$$

5. **HOUSING** The Greens bought a condominium for \$110,000 in 2000. If its value appreciates at an average rate of 6% per year, what will the value be in 2005?

$$\$147,204.81$$

DEFORESTATION For Exercises 6 and 7, use the following information.

During the 1990s, the forested area of Guatemala decreased at an average rate of 1.7%.

Source: www.worldbank.org

6. If the forested area in Guatemala in 1990 was about 34,400 square kilometers, write an equation for the forested area for t years after 1990.

$$A = 34,400(.983)^t$$

7. If this trend continues, predict the forested area in 2015.

$$22,407 \text{ km}^2$$

8. **BUSINESS** A piece of machinery valued at \$25,000 depreciates at a steady rate of 10% yearly. What will the value of the piece of machinery be after 7 years?

$$\$11,957.42$$

9. **TRANSPORTATION** A new car costs \$18,000. It is expected to depreciate at an average rate of 12% per year. Find the value of the car in 8 years.

$$\$6,473.42$$

10. **POPULATION** The population of Osaka, Japan declined at an average annual rate of 0.05% for the five years between 1995 and 2000. If the population of Osaka was 11,013,000 in 2000 and it continues to decline at the same rate, predict the population in 2050.

$$10,741,088 \text{ people}$$