

2.5 Extra Practice

Precalculus Name: _____ Per: _____

2.5 Retake 1

1. A population of bacteria doubles every hour. If there were initially 100 bacteria, how many bacteria will there be after 5 hours?
2. The value of a car depreciates at a rate of 10% per year. If a car is currently worth \$20,000, what will its value be after 3 years?
3. The value of an investment increases by 6% annually. If an initial investment is \$10,000, what will be its value after 4 years?
4. A radioactive substance decays at a rate of 20% per hour. If there were initially 500 grams of the substance, how much will remain after 2 hours?
5. The population of a town grows exponentially at a rate of 3% per year. If the population is currently 10,000, what will be the population after 10 years?
6. The amount of a medication in a patient's bloodstream decreases by 15% per hour. If there were initially 200 milligrams of medication, how much will remain after 3 hours?
7. The number of cells in a culture doubles every 24 hours. If there were initially 100 cells, how many cells will there be after 7 days?
8. The value of a computer decreases by 5% each year. If the computer is currently worth \$1,500, what will its value be after 4 years?
9. The value of a stock increases by 8% annually. If an initial investment is \$5,000, what will be its value after 6 years?
10. A radioactive substance decays at a rate of 30% per day. If there were initially 1,000 grams of the substance, how much will remain after 5 days?

2.5 Extra Practice

Precalculus Name: _____ Per: _____

2.5 Retake 2

1. The population of a town is modeled by the exponential function $P(t) = 5000e^{(0.02t)}$, where t represents time in years. If the current population is 6000, find the value of t .
2. The value of a car depreciates at a rate of 10% per year. If the car was initially worth \$20,000, what will be its value after 5 years?
3. A bacteria population doubles every 4 hours. If there are initially 100 bacteria, what will be the population after 12 hours?
4. The temperature of a cup of coffee cools down at a rate of 2 degrees Celsius per minute. If the initial temperature is 80 degrees Celsius, what will be the temperature after 10 minutes?
5. The value of an investment grows by 3% per year. If \$5000 is invested initially, how much will it be worth after 8 years?
6. A radioactive substance decays at a rate of 6% per hour. If there are initially 100 grams of the substance, how much will remain after 3 hours?
7. The height of a tree is modeled by the exponential function $h(t) = 12e^{(0.05t)}$, where t represents time in years. If the tree is currently 20 feet tall, find the value of t .
8. The number of bacteria in a culture triples every 6 hours. If there are initially 1000 bacteria, what will be the population after 18 hours?
9. The amount of a medication in the bloodstream decreases by 20% per hour. If there are initially 500 milligrams of the medication, how much will remain after 4 hours?
10. The value of a collectible item increases by 8% per year. If the item is currently worth \$1000, how much will it be worth after 15 years?

2.5 Extra Practice

Precalculus Name: _____ Per: _____

2.5 Retake 3

1. The population of a city is currently 100,000 and is growing exponentially at a rate of 3% per year. Write an exponential function to model the population of the city after t years.
2. A radioactive substance has a half-life of 10 days. If the initial amount of the substance is 500 grams, write an exponential decay function to model the amount of the substance remaining after t days.
3. The value of a car depreciates exponentially at a rate of 15% per year. If the car's original value was \$25,000, write an exponential decay function to model the value of the car after t years.
4. The temperature of a cup of coffee decreases exponentially at a rate of 2 degrees Celsius per minute. If the initial temperature is 80 degrees Celsius, write an exponential decay function to model the temperature of the coffee after t minutes.
5. The number of bacteria in a petri dish doubles every hour. If there are initially 100 bacteria, write an exponential growth function to model the number of bacteria after t hours.
6. The height of a tree is increasing exponentially at a rate of 5 cm per year. If the tree's height is currently 200 cm, write an exponential growth function to model the height of the tree after t years.
7. The balance in a savings account grows exponentially at an annual interest rate of 4%. If the initial balance is \$10,000, write an exponential growth function to model the balance after t years.
8. The number of students in a school decreases exponentially at a rate of 2% per year. If there are initially 500 students, write an exponential decay function to model the number of students after t years.
9. The value of an investment grows exponentially at an annual interest rate of 6%. If the initial investment is \$50,000, write an exponential growth function to model the value of the investment after t years.
10. The population of a colony of bacteria follows an exponential growth model with a growth rate of 120% per hour. If there are initially 10 bacteria, write an exponential growth function to model the population of the colony after t hours.