

Modeling Exponential Growth and Decay

Practice and Problem Solving: A/B

Write an exponential growth function to model each situation. Determine the domain and range of each function. Then find the value of the function after the given amount of time.

1. Annual sales for a fast food restaurant are \$650,000 and are increasing at a rate of 4% per year; 5 years

2. The population of a school is 800 students and is increasing at a rate of 2% per year; 6 years

Write an exponential decay function to model each situation. Determine the domain and range of each function. Then find the value of the function after the given amount of time.

3. The population of a town is 2500 and is decreasing at a rate of 3% per year; 5 years

4. The value of a company's equipment is \$25,000 and decreases at a rate of 15% per year; 8 years

Write an exponential growth or decay function to model each situation.

5. The population is 20,000 now and expected to grow at an annual rate of 5%. 6. A boat that cost \$45,000 is depreciating at a rate of 20% per year.

LESSON 16-2

Practice and Problem Solving: A/B

1. $y = 650,000(1.04)^t$; sales \approx \$790,824.39

D = set of real numbers $t \geq 0$

R = set of real numbers $y \geq 650,000$

2. $y = 800(1.02)^x$;

population \approx 901 students

D = set of real numbers $t \geq 0$

R = set of real numbers $y \geq 800$

3. $y = 2500(0.97)^t$;

population \approx 2147 people

D = set of real numbers $t \geq 0$

R = set of real numbers $0 \leq y \leq 2500$

4. $y = 25,000(0.85)^t$; value \approx \$6,812.26

D = set of real numbers $t \geq 0$

R = set of real numbers $0 \leq y \leq 25,000$

5. $y = 20,000(1.05)^t$

6. $y = 45,000(0.8)^t$