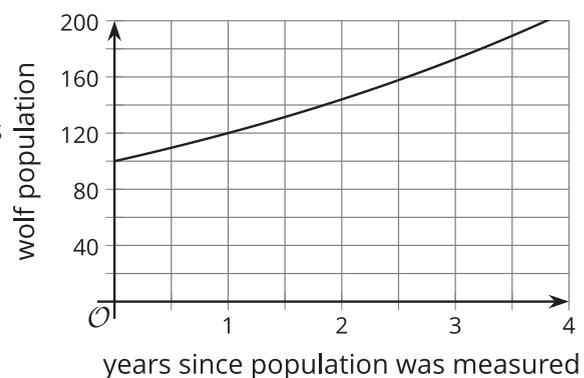


Lesson 2 Practice Problems

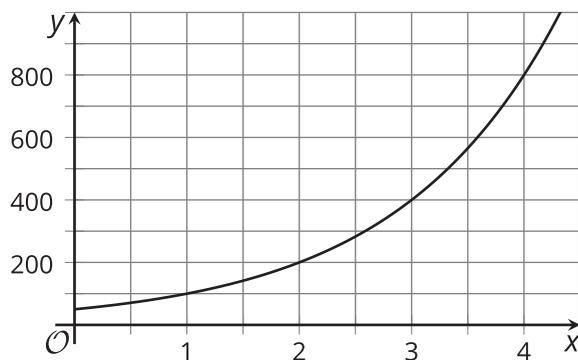
1. In 1990, the value of a home is \$170,000. Since then, its value has increased 5% per year.
 - a. What is the approximate value of the home in the year 1993?
 - b. Write an equation, in function notation, to represent the value of the home as a function of time in years since 1990, t .
 - c. Will the value of the home be more than \$500,000 in 2020 (assuming that the trend continues)? Show your reasoning.

2. The graph shows a wolf population which has been growing exponentially.

- a. What was the population when it was first measured?
- b. By what factor did the population grow in the first year?
- c. Write an equation relating the wolf population, w , and the number of years since it was measured, t .



3. Here is the graph of an exponential function f .



Find an equation defining f .
Explain your reasoning.

4. The equation $f(t) = 24,500 \cdot (0.88)^t$ represents the value of a car, in dollars, t years after it was purchased.

- What do the numbers 24,500 and 0.88 mean?
- What does $f(9)$ represent?
- Sketch a graph that represents the function f and shows $f(0)$, $f(1)$, and $f(2)$.

5. The first two terms of an exponential sequence are 18 and 6. What are the next 3 terms of this sequence?

(From Unit 4, Lesson 1.)

6. A bacteria population has been doubling each day for the last 5 days. It is currently 100,000. What was the bacterial population 5 days ago? Explain how you know.

(From Unit 4, Lesson 1.)

7. Select all expressions that are equivalent to $27^{\frac{1}{3}}$.

A. 9

B. 3

C. $\sqrt{27}$

D. $\sqrt[3]{27}$

E. $\sqrt[3]{3^3}$

F. $\frac{1}{27}$

G. $\frac{1}{27^3}$

(From Unit 3, Lesson 3.)