
Chapter 1 Test

1. Knowledge and Understanding (Functions)

Create a general term for each sequence. Identify the sequence as arithmetic, geometric, or neither.

- (a) 11, 7, 3, ...
- (b) 5, 10, 20, ...
- (c) 1, 9, 25, 49, ...

2. Knowledge and Understanding (Functions and Relations)

Create a general term and a recursive formula for each sequence.

- (a) 11, 7, 3, ...
- (b) 5, 10, 20, ...
- (c) 1, 9, 25, 49, ...

3. Application, Communication

Determine the value of the variable in each equation and describe a situation in which this equation might be used.

- (a) $A = 3000(1.04)^5$
- (b) $8 = 256(0.5)^t$
- (c) $5500 = P\left(1 + \frac{0.03}{12}\right)^{24}$

4. Application

An investment of \$8000 gains interest at 4%/a, compounded quarterly.

- (a) Find the value of the investment after three years.
- (b) After which year will the value of the investment surpass \$10 000?

5. Communication, Knowledge and Understanding

- (a) Explain how to test a sequence to determine if it is arithmetic or geometric.
- (b) Explain how a graph showing the terms of a sequence can be used to determine if the sequence is arithmetic or geometric.

6. Thinking, Inquiry, Problem Solving

In a provincial park, the population of deer in 1995, 1996, and 1997 was recorded as 225, 270, 324, respectively.

- (a) Predict the number of deer in 2005 if the growth rate remains the same.
- (b) When will the number of deer exceed 500?
- (c) The park ecosystem manager knows that she must cull the herd when the number of deer passes 700 to sustain a healthy deer herd. Predict when two culls should take place in the new century. When a cull occurs, the herd size is reduced to 400 deer.

7. Knowledge and Understanding

Simplify each expression. Express your answers using positive exponents.

(a) $\frac{(x^3y^4)^2}{x^5y^{-1}}$ (b) $(x^8y^{12})^{\frac{2}{3}}$ (c) $\frac{(x^{3a+1})(x^{a-3})}{\sqrt[4]{x^8}}$

8. Knowledge and Understanding

Solve each equation without using a calculator. Show the steps of your solution.

(a) $4^{2-x} = 8^{x+1}$ (b) $3^{2x} - 4(3^x) + 3 = 0$