

SHOW ALL OF YOUR WORK in the space provided. Take the time to check your work. Circle your final answers. Write neatly.

1. Circle all the patterns that represent a geometric sequence.

Ⓐ 7, -21, 63, -189, ...

Ⓑ 1, 2, 4, 12, ...

Ⓒ 100, 25, 6.25, 1.5625, ...

Ⓓ 10, 8, 6, 4, ...

Ⓔ 3, 15, 75, 375, ...

2. Consider the function $y = 5(1.25)^x$.

a) Does this function represent exponential growth or decay?

b) What is the y intercept?

c) Determine the function's domain and range.

D: { }

R: { }

3. What is the value of an investment if \$1200 is invested at an interest rate of 4.6% compounded monthly for 5 years? Round to the nearest cent, if necessary.

4. Write an exponential equation for the graph that goes through (2,16) and (3,32).

5. What are the first five terms of the sequence for $a_1 = -2$ and $a_n = -3a_{n-1}$ if $n \geq 2$?

6. Use an exponential equation to find the 9th term of the geometric sequence. Round to the nearest hundredth, if necessary.

36, 18, 9, 4.5, ...

7. A weightlifter can bench press 190 pounds. She wants to increase the weight according to the function $w(x) = 190(1.03)^x$, where x represents the number of training cycles completed. Rounding to the nearest whole pound, calculate how much she will bench press after 5 training sessions.

8. What is the recursive formula for the arithmetic sequence 33, 37, 41, 45, ...?

Ⓐ $a_1 = 33, a_n = 4a_{n-1}, n \geq 2$

Ⓑ $a_1 = 33, a_n = \frac{37}{33}a_{n-1}, n \geq 2$

Ⓒ $a_1 = 33, a_n = a_{n-1} + 4, n \geq 2$

Ⓓ $a_1 = 33, a_n = a_{n-1} - 4, n \geq 2$

9. A city's population is 358,000 and is decreasing at an annual rate of 0.25%.

a) Which function represents the estimated population after t years?

Ⓐ $y = 358,000(1.9975)^t$

Ⓑ $y = 358,000(0.75)^t$

Ⓒ $y = 358,000(0.25)^t$

Ⓓ $y = 358,000(0.9975)^t$

b) Predict the population of the city in 30 years to the nearest whole number.

10. Write the explicit formula for the function.

$a_1 = 55, a_n = 2a_{n-1}, n \geq 2.$