

Name \_\_\_\_\_ Date \_\_\_\_\_

### **Thank Goodness Descartes Didn't Drink Some Warm Milk!** **Graphs of Sequences**

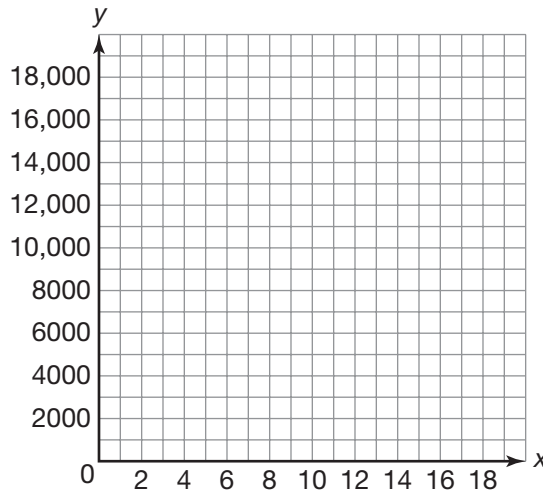
1. Triplets seem to run in the Tribiani family. Great-grandma Tribiani is one of a set of triplets. She had triplets, and each of them had triplets. The sequence shows the number of descendants in the Tribiani family over several generations if this trend continues.

1, 3, 9, 27,...

- a. Describe the sequence.
  
  
  
  
  
  
  
  
  
  
- b. Write an explicit formula to represent this sequence.
  
  
  
  
  
  
  
  
  
  
- c. Create a table of values using the first 10 terms of the sequence.

Term Number	Term Value

- d. Use each pair of numbers from the table as an ordered pair. Then graph the ordered pairs on the grid shown.



- e. Describe the shape of the graph. How does the graph's shape confirm your answer to part (a)?

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- f. Is the graph discrete or continuous? Explain your reasoning.

- g. Use the explicit formula from part (b) to predict the number of descendants in the Tribiani family in 20 generations. Show your work.

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**Well, Maybe It *Is* a Function!**  
**Sequences and Functions**

1. Rakesha claims that the equation  $f(n) = 5n - 7$  is the function notation for the sequence that is represented by the explicit formula  $a_n = -2 + 5(n - 1)$ . Jin doesn't understand how this can be the case.
  - a. Help Jin understand by listing the steps for how to write the explicit formula for the given sequence in function notation. Provide a rationale for each step.

- b. Describe the graph of this function. Explain your reasoning.

2. Analyze the geometric sequence represented by the explicit formula  $g_n = 12 \cdot 3^{n-1}$ .
  - a. Write the explicit formula for the given sequence in function notation. Provide a rationale for each step.

- b. Describe the graph of this function. Explain your reasoning.

3. Use the geometric sequence below to answer the questions.

$$g_n = -\frac{3}{20} \cdot \left(-\frac{1}{5}\right)^{n-1}$$

- a. Cassandra claims that the function notation for this sequence is  $f(n) = \frac{3}{4} \cdot \left(-\frac{1}{5}\right)^n$ . Abe claims that the function notation for this sequence is  $f(n) = \frac{3}{100} \cdot \left(-\frac{1}{5}\right)^n$ . Who is correct? What mistake(s) did the other student make? Support your answer with your work.

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- b. Describe the graph of this function. Explain your reasoning.