

Review

Use a pencil and highlight your answers. Show your work and justify your reasoning.

1. Savannah accidentally left two sea monkeys alone in the fish tank. A week later the number of sea monkeys tripled. The sea monkey population continued to triple each week after that. Let w be the number of weeks that have passed since the unfortunate incident with the sea monkeys and $s(w)$ be the number of sea monkeys in the tank.

a) Write the recursive function for the population:

b) Write the explicit function for the population:

c) Savannah is concerned that the world may soon be overrun with sea monkeys. How many sea monkeys will there be in 70 days?

Intrigued by Savannah's sea monkeys, Anthony starts a collection of Octonauts of his own. He keeps track of the population in the table below. Let w be the number of weeks and $O(w)$ be the population of Octonauts.

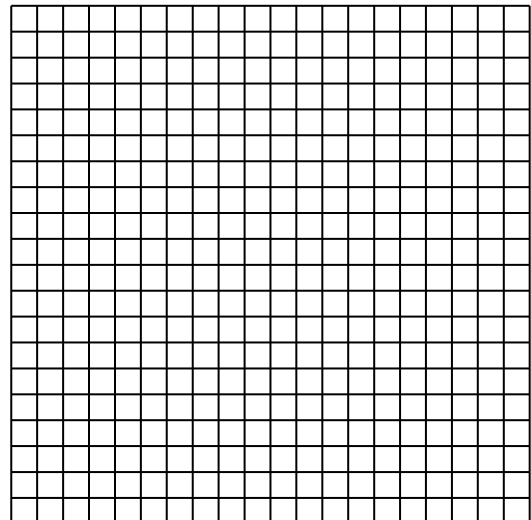
w	0	1	2	3	4
$O(w)$	15	21	27	33	39

d) Write the recursive function for the population:

e) Write the explicit function for the population:

f) The Octonauts will be ready to conquer the Anthony's house as soon as their population reaches 140. How many weeks will pass until the Octonaut revolution begins?

g) Graph both functions on the graph at the right. Be sure to show your reasoning!



h) Anthony's only hope is that the sea monkeys will join the fight against the Octonauts. When will the populations of sea monkeys be more than the Octonauts? Show your work!

Given each recursive function, determine the explicit function.

2. $f(1) = 12; f(n) = 8 \bullet f(n - 1)$

3. $f(0) = 10; f(n) = -2 \bullet f(n - 1)$

4. $f(0) = 7; f(n) = f(n - 1) \bullet 6$

5. $f(1) = -15; f(n) = 5 \bullet f(n - 1)$

6. $f(0) = -7; f(n) = f(n - 1) \bullet 3$

7. $f(1) = 16; f(n) = \frac{1}{2} \bullet f(n - 1)$

Given each explicit function, determine the recursive function.

8. $f(n) = -10(3)^n$

9. $f(n) = 65\left(\frac{3}{4}\right)^{n-1}$

10. $f(n) = 8(10)^{n-1}$

Each of the tables below represents a GEOMETRIC sequence. Find the missing terms in the sequence. Be sure to show the work for how you determined the constant rate.

11.

x	y
1	12
2	
3	
4	324
5	

12.

x	y
1	
2	32
3	
4	
5	-256

13.

x	y
1	64
2	
3	16
4	
5	

Fill in the next two terms. Then write the recursive and explicit functions for each sequence. Identify the indicated term.

14. 8, 24, 72, 216, ____, ____, ...

Recursive formula Explicit formula

What is the 10th term?

15. 50, 43, 36, 29, ____, ____, ...

Recursive formula Explicit formula

What is the 25th term?