READY

Topic: Arithmetic and geometric sequences

For each set of sequences, find the first five terms. Then compare the growth of the arithmetic sequence and the geometric sequence. Which grows faster?   When?

1.   Arithmetic sequence: $f(1) = 2$, common difference, $d = 3$
        Geometric sequence: $g(1) = 2$, common ratio, $r = 3$

Arithmetic	Geometric
$f(1) =$	$g(1) =$
$f(2) =$	$g(2) =$
$f(3) =$	$g(3) =$
$f(4) =$	$g(4) =$
$f(5) =$	$g(5) =$

   a) Which value do you think will be more, $f(100)$ or $g(100)$?   b) Why?

2.   Arithmetic sequence: $f(1) = 2$, common difference, $d = 10$
        Geometric sequence: $g(1) = 128$, common ratio, $r = \frac{1}{2}$

Arithmetic	Geometric
$f(1) =$	$g(1) =$
$f(2) =$	$g(2) =$
$f(3) =$	$g(3) =$
$f(4) =$	$g(4) =$
$f(5) =$	$g(5) =$

   a) Which value do you think will be more, $f(100)$ or $g(100)$?   b) Why?

3.   Arithmetic sequence: $f(1) = 20$, $d = 10$
        Geometric sequence: $g(1) = 2$, $r = 2$

Arithmetic	Geometric
$f(1) =$	$g(1) =$
$f(2) =$	$g(2) =$
$f(3) =$	$g(3) =$
$f(4) =$	$g(4) =$
$f(5) =$	$g(5) =$

   a) Which value do you think will be more, $f(100)$ or $g(100)$?   b) Why?

4. Arithmetic sequence: $f(1) = 50$, common difference, $d = -10$
    Geometric sequence: $g(1) = 1$, common ratio, $r = 2$

Arithmetic	Geometric
$f(1) =$	$g(1) =$
$f(2) =$	$g(2) =$
$f(3) =$	$g(3) =$
$f(4) =$	$g(4) =$
$f(5) =$	$g(5) =$

a) Which value do you think will be more, $f(100)$ or $g(100)$?   b) Why?

5. Arithmetic sequence: $f(1) = 64$, common difference, $d = -2$
    Geometric sequence: $g(1) = 64$, common ratio, $r = \frac{1}{2}$

Arithmetic	Geometric
$f(1) =$	$g(1) =$
$f(2) =$	$g(2) =$
$f(3) =$	$g(3) =$
$f(4) =$	$g(4) =$
$f(5) =$	$g(5) =$

a) Which value do you think will be more, $f(100)$ or $g(100)$?   b) Why?

6. Considering arithmetic and geometric sequences, would there ever be a time that a geometric sequence <u>does not</u> out grow an arithmetic sequence in the long run as the number of terms of the sequences becomes really large?   Explain.

SET

Topic: Finding missing terms in a geometric sequence

Each of the tables below represents a *geometric* sequence. Find the missing terms in the sequence. Show your method.

7. Table 1

x	1	2	3
y	3		12

8. Table 2

x	y
1	2
2	
3	
4	54

9. Table 3

x	y
1	5
2	
3	20
4	

10. Table 4

x	y
1	4
2	
3	
4	
5	324

GO

Topic: Writing the explicit equations of a geometric sequence

Given the following information, determine the explicit equation for each geometric sequence.

11. $f(1) = 8, common\ ratio\ r = 2$

12. $f(1) = 4, f(n) = 3f(n-1)$

13. $f(n) = 4f(n-1);\ f(1) = \frac{5}{3}$

14. Which geometric sequence above has the greatest value at $f(100)$?

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