Bellwork Alg 2 Tuesday, September 10, 2019

1. Write the first 4 terms of each sequence.

a) $t_n = 5(4)^{n-1}$

b) $t_1 = -6$
$t_n = t_{n-1} + 10$

c) $t_1 = 2$
$t_2 = 5$
$t_n = t_{n-1} - 3 \cdot t_{n-2}$

2. Find the sum of the first 20 terms of this sequence: $9, 13, 17, 21, 25, \ldots$

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ANSWERS

1. Write the first 4 terms of each sequence.

a) $t_n = 5(4)^{n-1}$

5, 20, 80, 320

n	t_n
1	$5(4)^{1-1} = 5(4)^0 = 5(1) = 5$
2	$5(4)^{2-1} = 5(4)^1 = 5(4) = 20$
3	$5(4)^{3-1} = 5(4)^2 = 5(16) = 80$
4	$5(4)^{4-1} = 5(4)^3 = 5(64) = 320$

-OR- NOTICE THIS IS AN EXPLICIT FORMULA FOR A GEOMETRIC SEQUENCE WHERE $t_1 = 5$ and $r = 4$

b) $t_1 = -6$

$t_n = t_{n-1} + 10$

-6, 4, 14, 24

$t_2 = t_1 + 10 = -6 + 10 = 4$

$t_3 = t_2 + 10 = 4 + 10 = 14$

$t_4 = t_3 + 10 = 14 + 10 = 24$

-OR- NOTICE THIS IS A RECURSIVE FORMULA FOR AN ARITHMETIC SEQUENCE WHERE $t_1 = -6$ and $d = 10$

c) $t_1 = 2$

$t_2 = 5$

$t_n = t_{n-1} - 3 \cdot t_{n-2}$ → any term is found by taking the previous term and subtracting three times the term two before.

t_1 t_2 t_3 t_4

2, 5, -1, -16

$t_3 = t_2 - 3 \cdot t_1 = 5 - 3(2) = 5 - 6 = -1$

$t_4 = t_3 - 3t_2 = -1 - 3(5) = -1 - 15 = -16$

2. Find the sum of the first 20 terms of this sequence: 9, 13, 17, 21, 25, …

Arithmetic Seq.
$t_1 = 9$ $d = 4$
$t_n = 9 + 4(n-1)$

20th term: $t_{20} = 9 + 4(20-1) = 85$

13 + 81 = 94

SEQ: 9, 13, 17, 21, 25, …, 73, 77, 81, 85

17 + 77 = 94

9 + 85 = 94

- pairs of #'s have a sum of 94
- There are $20 \div 2 = 10$ pairs of #'s

TOTAL SUM = $10 \cdot 94 = 940$