Bellwork Alg 2B Thursday, January 11, 2018

State the number of terms in each sequence.

1. Arithmetic Sequence: $a_4 = 32$ $a_7 = 53$
last term is 137

2. Geometric Sequence: $a_3 = 36$ $a_6 = 972$
last term is 2125764

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3. Write the recursive formula for this sequence:
$13, 38, 68, 103, \ldots$

4. Write the explicit formula for this sequence:
$0, 1, 4, 9, 16, \ldots$

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1. Arithmetic Sequence: $a_4 = 32$ $a_7 = 53$ last term is 137

1ST: Find Common difference

$$d = \frac{53-32}{7-4} = \frac{21}{3} = 7$$

2nd: Find 1ST Term

$$a_1 = a_4 - 3(7) = 32 - 21 = 11$$

3rd: write Explicit Formula

$$a_n = 11 + 7(n-1)$$

4th: Replace a_n with last term and Solve for n

$$137 = 11 + 7(n-1)$$
$$126 = 7(n-1)$$
$$18 = n-1$$
$$n = 19$$

19 terms

2. Geometric Sequence: $a_3 = 36$ $a_6 = 972$ last term is 2125764

3

1ST: Find Common Ratio

$$r = \sqrt[3]{\frac{972}{36}} = \sqrt[3]{27} = 3$$

2nd: Find 1ST Term

$$a_1 = \frac{a_3}{r \cdot r} = \frac{36}{3 \cdot 3} = 4$$

3rd: write explicit Formula

$$a_n = 4(3)^{n-1}$$

4TH: Replace a_n with last term and solve for n.

$$2125764 = 4(3)^{n-1}$$
$$531441 = 3^{n-1}$$
$$\log_3 531441 = n-1$$
$$12 = n-1$$
$$n = 13$$

13 Terms

3. Write the recursive formula for this sequence: 13, 38, 68, 103, …

n = 1 2 3 4

13, 38, 68, 103

+25 +30 +35

5(5) 5(6) 5(7)

$a_1 = 13$

$a_n = a_{n-1} + 5(n+3)$

4. Write the explicit formula for this sequence: 0, 1, 4, 9, 16, …

n = 1 2 3 4 5

$(0)^2, (1)^2, (2)^2, (3)^2, (4)^2$

$a_n = (n-1)^2$