Name Key Date Hour

Review – Sequences and Series

Sequences:

Identify each sequence as ARITHMETIC, GEOMETRIC, or NEITHER.

1) 4, 8, 16, 32,… geometric (×2)

2) 2, 3, 5, 8,… neither

3) 8, 5, 2, -1,… arithmetic (−3)

4) 60, -30, 15, -7.5,… geometric (×$-\frac{1}{2}$)

Find the next three terms in the sequence.

5) 8, 12, 16, 20, 24, 28 (+4)

6) -6, 18, -54, 162, -486, 1458 (×−3)

Write an explicit formula to find the n^{th} term for each sequence.

7) 5, 30, 180, … (r = 6)

$a_n = 5 \cdot 6^{n-1}$

8) 32, 23, 14,… (d = −9)

$a_n = 32 - 9(n-1)$

Find the indicated term for each arithmetic sequence.

9) $a_1 = 7, d = -2, n = 15$

$a_{15} = 7 - 2(15-1)$

$= -21$

10) *Find* a_{18} *for* $5, 18, 31, 44, \ldots$

$a_{18} = 5 + 13(18-1)$

$= 226$

11) An arithmetic sequence begins with the terms 5, 26, 47, 68,… One of the terms in the sequence is 1601. Find the term number.

$1601 = 5 + 21(n-1)$

$1596 = 21(n-1)$

$76 = n-1$

$n = 77$

Find the indicated term for each geometric sequence.

12) $a_1 = 7, r = 4, n = 9$

$a_9 = 7 \cdot 4^{9-1}$

$= 458,752$

13) *Find* a_{10} *for* $3, 18, 108, \ldots$

$a_{10} = 3 \cdot 6^{10-1}$

$= 30,233,088$

14) When Olivia was three years old her ponytail was 6 inches long. Her hair grew at a rate of 0.5 inches per month. If her hair continued to grow at the same rate and she did not get it cut, how long would her ponytail be in 18 months from that time?

$a_{18} = 6 + .5(18-1)$

$= 14.5$ inches