A# _____

Arithmetic and Geometric Sequences and Series Worksheet

Tell whether the sequence is arithmetic, geometric or neither. If it is arithmetic, determine the common difference. If it is geometric, determine the common ratio.

1) 2, 4, 8, 16, …

2) 5, 10, 15, 120, …

3) –4, -2, 0, 2, …

4) $\frac{1}{3}, \frac{1}{6}, \frac{1}{9}, \frac{1}{12}, \ldots$

5) 4, -2, 1, - ½, …

6) 0, -20, -40, -60, …

7) 4, -8, 16, -32, …

8) $\frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \ldots$

9) 8, 15, 22, 29, …

10) 4, -6, 10, -14, ...

Determine the value of the specified term.

11) Eighteenth term of 3, 7, 11, …

12) Fifteenth term of 20, 15, 10, 5, …

13) Tenth term of $\frac{1}{4}, \frac{1}{2}, 1, 2, \ldots$

14) Sixth term of 1000, 100, 10, …

Find the specified term. Round to three decimal places if necessary.

15) Sixty-first term of the sequence for which $a_1 = 4$ and $r = 0.95$

16) Eighty-third term of the sequence for which $a_1 = 8$ and $r = 1.01$

17) Seventy-third term of the sequence for which $a_1 = 18$ and $d = -4$

18) Ninety-fifth term of the sequence for which $a_1 = -14$ and $d = -3$

19) Determine S_{22} for $1 + 5 + 9 + ...$

20) Determine S_{27} for a series with $a_1 = 17$ and $d = -4$

21) Evaluate: $\sum_{k=1}^{45} 2 - 3(k-1)$

22) Determine S_8 for $1 + 3 + 9 + ...$

23) Determine S_{10} for $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + ...$

24) Determine S_1 for the series with $a_1 = 4$ and $r = 1.2$

25) Evaluate $\sum_{k=1}^{6} 4 \cdot 3^{k-1}$

For 26 – 28, use the given series to determine parts a - c:

26) 4, 24, 124, 624, …

a) a_n

b) A recursive definition for S_n

c) S_4

27) 4, 24, 144, 864, …

a) a_n

b) A recursive definition for S_n

c) S_8

28) 4, 24, 44, 64, 84, …

a) a_n

b) A recursive definition for S_n

c) S_{23}