

## Arithmetic and Geometric Series

Date \_\_\_\_\_ Period \_\_\_\_\_

**Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, and the explicit formula.**

1) 35, 37, 39, 41, ...

2) 2, 10, 50, 250, ...

3) -7, -17, -27, -37, ...

**Find the 8th term.**

4)  $4, \frac{4}{5}, \frac{4}{25}, \frac{4}{125}, \dots$

5) 3, -6, 12, -24, ...

6)  $-1, -\frac{2}{5}, -\frac{4}{25}, -\frac{8}{125}, \dots$

**Evaluate the related series of each sequence.**

7) 3, 10, 17, 24, 31, 38, 45

8) 10, 12, 14, 16, 18, 20

9) 2, 8, 14, 20, 26, 32

10) 25, 35, 45, 55, 65, 75, 85

11) 11, 16, 21, 26, 31, 36, 41

**Evaluate each geometric series described.**

12)  $-2 + 12 - 72 + 432\dots$ ,  $n = 6$

13)  $-5 - \frac{5}{2} - \frac{5}{4} - \frac{5}{8}\dots$ ,  $n = 6$

14)  $-3 + 6 - 12 + 24\dots$ ,  $n = 8$

15)  $a_1 = -3$ ,  $a_n = -2187$ ,  $r = 3$

16)  $a_1 = -1$ ,  $a_n = -4096$ ,  $r = -4$

**Evaluate each series.**

17)  $\sum_{k=1}^5 (400 - k^2)$

18)  $\sum_{a=1}^7 (40 - a)$

19)  $\sum_{m=1}^5 m^2$

20)  $\sum_{n=1}^6 (2n^2 + 3)$

21)  $\sum_{n=3}^9 n(n-1)$