

Arithmetic Sequences and Series

Date _____ Period _____

Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, the explicit formula, and the three terms in the sequence after the last one given.

1) 13, 15, 17, 19, ...

2) 4, 7, 12, 19, ...

3) $2, \frac{5}{2}, 3, \frac{7}{2}, \dots$

4) 34, 28, 22, 16, ...

Given the explicit formula for an arithmetic sequence find the common difference, the term named in the problem, and the recursive formula.

5) $a_n = 17 + 8n$
Find a_{39}

6) $a_n = -\frac{5}{2} + \frac{3}{2}n$
Find a_{22}

Given two terms in an arithmetic sequence find the common difference, the explicit formula, and the recursive formula.

7) $a_{11} = 110$ and $a_{37} = 370$

8) $a_{10} = 14$ and $a_{37} = 122$

Find the missing terms in each arithmetic sequence.

9) ..., $\frac{3}{2}$, ____, ____, 0, ...

10) ..., 3.4, ____, ____, -2, ...

Evaluate the related series of each sequence.

11) 3.7, 4.6, 5.5, 6.4

12) 26, 36, 46, 56, 66, 76, 86

Evaluate each arithmetic series described.

13) $a_1 = \frac{3}{2}$, $d = \frac{1}{2}$, $n = 50$

14) $a_1 = -22$, $d = -3$, $n = 12$

15) $a_1 = 20$, $a_n = 55$, $n = 6$

16) $a_1 = 14$, $a_n = 86$, $n = 10$

17) $\sum_{m=1}^{10} \left(-2 + \frac{4}{3}m\right)$

18) $\sum_{n=1}^9 (7n - 17)$

19) $\sum_{m=1}^{35} (7m - 12)$

20) $\sum_{k=1}^{14} \left(-\frac{2}{3} + \frac{1}{2}k\right)$

21) $\sum_{i=2}^{10} (0.8i - 6.3)$

22) $\sum_{n=4}^{53} (2n - 7)$

Determine the number of terms n in each arithmetic series.

23) $1 + (-2) + (-5) + (-8)\dots$, $S_n = -259$

24) $18 + 21 + 24 + 27\dots$, $S_n = 468$