

9.3--Arithmetic Functions

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

1) $-30, -20, -10, 0, \dots$

Common Difference: $d = 10$

$a_{52} = 480$

Explicit: $a_n = -40 + 10n$

2) $14, 6, -2, -10, \dots$

Common Difference: $d = -8$

$a_{52} = -394$

Explicit: $a_n = 22 - 8n$

3) $14, 24, 34, 44, \dots$

Common Difference: $d = 10$

$a_{52} = 524$

Explicit: $a_n = 4 + 10n$

4) $-23, -32, -41, -50, \dots$

Common Difference: $d = -9$

$a_{52} = -482$

Explicit: $a_n = -14 - 9n$

Given the explicit formula for an arithmetic sequence find the first five terms and the 52nd term.

5) $a_n = -3 - 2n$

First Five Terms: $-5, -7, -9, -11, -13$

$a_{52} = -107$

6) $a_n = 24 - 4n$

First Five Terms: $20, 16, 12, 8, 4$

$a_{52} = -184$

7) $a_n = -229 + 200n$

First Five Terms: $-29, 171, 371, 571, 771$

$a_{52} = 10171$

8) $a_n = -\frac{1}{2}n + \frac{1}{2}$ First Five Terms: $0, -\frac{1}{2}, -1, -\frac{3}{2}, -2$

$a_{52} = -\frac{51}{2}$

Given the first term and the common difference of an arithmetic sequence find the explicit formula.

9) $a_1 = 27, d = 2$

$$a_n = 25 + 2n$$

10) $a_1 = -17, d = -100$

$$a_n = 83 - 100n$$

11) $a_1 = 39, d = -5$

$$a_n = 44 - 5n$$

12) $a_1 = 15, d = 3$

$$a_n = 12 + 3n$$

Given a term in an arithmetic sequence and the common difference find the first five terms and the 52nd term.

13) $a_{37} = -321, d = -9$

First Five Terms: 3, -6, -15, -24, -33

$$a_{52} = -456$$

14) $a_{28} = 140, d = 6$

First Five Terms: -22, -16, -10, -4, 2

$$a_{52} = 284$$

15) $a_{19} = -550, d = -30$

First Five Terms: -10, -40, -70, -100, -130

$$a_{52} = -1540$$

16) $a_{13} = 2366, d = 200$

First Five Terms: -34, 166, 366, 566, 766

$$a_{52} = 10166$$