Name_____ ID: 1

Arithmetic Sequences

Date_____ Period____

Determine if the sequence is arithmetic. If it is, find the common difference.

1) 14, 22, 30, 38, ...

2) 10, 110, 210, 310, ...

3) −14, −6, −2, 0, ...

4) 6, −4, −14, −24, ...

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

5) −13, −21, −29, −37, ...

6) 1, −6, −13, −20, ...

7) −5, 4, 13, 22, ...

8) 38, 48, 58, 68, ...

9) 26, 21, 16, 11, ...

10) 10, 0, −10, −20, ...

Given the explicit formula for an arithmetic sequence find the first five terms.

11) $a_n = 22 + (n-1) \cdot -200$

12) $a_n = -36 + (n-1) \cdot 8$

13) $a_n = -27 + (n-1) \cdot 100$

14) $a_n = 36 + (n-1) \cdot -30$

Given the recursive formula for an arithmetic sequence find the first five terms.

15) $a_n = a_{n-1} - 10$
    $a_1 = 26$

16) $a_n = a_{n-1} - 5$
    $a_1 = 14$

17) $a_n = a_{n-1} - 6$
    $a_1 = 18$

18) $a_n = a_{n-1} - 100$
    $a_1 = 2$

Given the explicit formula for an arithmetic sequence find the 52nd term.

19) $a_n = 6 + (n-1) \cdot 5$

20) $a_n = 26 + (n-1) \cdot -10$

21) $a_n = -20 + (n-1) \cdot 7$

22) $a_n = 25 + (n-1) \cdot 9$

Find the 52nd term and the explicit formula.

23) −34, −44, −54, −64, ...

24) −29, −35, −41, −47, ...

25) 23, 15, 7, −1, ...

26) −16, −116, −216, −316, ...

Answers to Arithmetic Sequences (ID: 1)

1) $d = 8$ 2) $d = 100$ 3) Not arithmetic   4) $d = -10$

5) Common Difference: $d = -8$ 6) Common Difference: $d = -7$ 7) Common Difference: $d = 9$

   Explicit: $a_n = -5 - 8n$ Explicit: $a_n = 8 - 7n$ Explicit: $a_n = -14 + 9n$

   Recursive: $a_n = a_{n-1} - 8$ Recursive: $a_n = a_{n-1} - 7$ Recursive: $a_n = a_{n-1} + 9$

   $a_1 = -13$ $a_1 = 1$ $a_1 = -5$

8) Common Difference: $d = 10$ 9) Common Difference: $d = -5$

   Explicit: $a_n = 28 + 10n$ Explicit: $a_n = 31 - 5n$

   Recursive: $a_n = a_{n-1} + 10$ Recursive: $a_n = a_{n-1} - 5$

   $a_1 = 38$ $a_1 = 26$

10) Common Difference: $d = -10$ 11) 22, -178, -378, -578, -778

    Explicit: $a_n = 20 - 10n$

    Recursive: $a_n = a_{n-1} - 10$

    $a_1 = 10$

12) -36, -28, -20, -12, -4 13) -27, 73, 173, 273, 373   14) 36, 6, -24, -54, -84

15) 26, 16, 6, -4, -14 16) 14, 9, 4, -1, -6 17) 18, 12, 6, 0, -6

18) 2, -98, -198, -298, -398 19) $a_{52} = 261$ 20) $a_{52} = -484$

21) $a_{52} = 337$ 22) $a_{52} = 484$ 23) $a_{52} = -544$

                                                        Explicit: $a_n = -24 - 10n$

24) $a_{52} = -335$ 25) $a_{52} = -385$ 26) $a_{52} = -5116$

    Explicit: $a_n = -23 - 6n$ Explicit: $a_n = 31 - 8n$ Explicit: $a_n = 84 - 100n$