12.1 Practice

Date_____ Period____

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

1) −18, −21, −24, −27, ...

2) −2, 18, 38, 58, ...

3) −20, −13, −6, 1, ...

4) −15, −215, −415, −615, ...

5) −1, −2, −6, −24, ...

6) 6, 0, −6, −12, ...

7) 4, 16, 36, 64, ...

8) −18, −28, −38, −48, ...

Given the recursive formula for an arithmetic sequence find the common difference, the first five terms, and the explicit formula.

9) $a_n = a_{n-1} - 6$
$a_1 = -5$

10) $a_n = a_{n-1} + 3$
$a_1 = 38$

11) $a_n = a_{n-1} - 8$
$a_1 = -18$

12) $a_n = a_{n-1} + 100$
$a_1 = -33$

13) $a_n = a_{n-1} - 30$
$a_1 = -14$

14) $a_n = a_{n-1} + 100$
$a_1 = 25$

Given the explicit formula for an arithmetic sequence find the common difference, the first five terms, and the recursive formula.

15) $a_n = 2 + (n - 1) \cdot -6$

16) $a_n = -28 + (n - 1) \cdot 20$

17) $a_n = -6 + (n - 1) \cdot 100$

18) $a_n = 15 + (n - 1) \cdot 100$

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

20) $a_n = -19 + (n - 1) \cdot 9$

Find the common difference, the 52nd term, the explicit formula, and the recursive formula.

21) 9, 2, −5, −12, ...

22) 26, 16, 6, −4, ...

23) 22, 19, 16, 13, ...

24) 40, 30, 20, 10, ...

Given the first term and the common difference of an arithmetic sequence find the 52nd term, the explicit formula, and the recursive formula.

25) $a_1 = -37,\ d = 100$

26) $a_1 = 29,\ d = 8$

27) $a_1 = -36,\ d = -9$

28) $a_1 = -16,\ d = -10$

Given a term in an arithmetic sequence and the common difference find the 52nd term, the explicit formula, and the recursive formula.

29) $a_{40} = 7777,\ d = 200$

30) $a_{23} = -136,\ d = -7$

31) $a_{36} = 286,\ d = 8$

32) $a_{19} = -46,\ d = -2$

Answers to 12.1 Practice (ID: 1)

1) Common Difference: $d = -3$
Next 3 terms: $-30,\ -33,\ -36$
Explicit: $a_n = -18 + (n-1) \cdot -3$
Recursive: $a_n = a_{n-1} - 3$
$a_1 = -18$

2) Common Difference: $d = 20$
Next 3 terms: $78,\ 98,\ 118$
Explicit: $a_n = -2 + (n-1) \cdot 20$
Recursive: $a_n = a_{n-1} + 20$
$a_1 = -2$

3) Common Difference: $d = 7$
Next 3 terms: $8,\ 15,\ 22$
Explicit: $a_n = -20 + (n-1) \cdot 7$
Recursive: $a_n = a_{n-1} + 7$
$a_1 = -20$

4) Common Difference: $d = -200$
Next 3 terms: $-815,\ -1015,\ -1215$
Explicit: $a_n = -15 + (n-1) \cdot -200$
Recursive: $a_n = a_{n-1} - 200$
$a_1 = -15$

5) Not arithmetic

6) Common Difference: $d = -6$
Next 3 terms: $-18,\ -24,\ -30$
Explicit: $a_n = 6 + (n-1) \cdot -6$
Recursive: $a_n = a_{n-1} - 6$
$a_1 = 6$

7) Not arithmetic

8) Common Difference: $d = -10$
Next 3 terms: $-58,\ -68,\ -78$
Explicit: $a_n = -18 + (n-1) \cdot -10$
Recursive: $a_n = a_{n-1} - 10$
$a_1 = -18$

9) Common Difference: $d = -6$
First Five Terms: $-5,\ -11,\ -17,\ -23,\ -29$
Explicit: $a_n = -5 + (n-1) \cdot -6$

10) Common Difference: $d = 3$
First Five Terms: $38,\ 41,\ 44,\ 47,\ 50$
Explicit: $a_n = 38 + (n-1) \cdot 3$

11) Common Difference: $d = -8$
First Five Terms: $-18,\ -26,\ -34,\ -42,\ -50$
Explicit: $a_n = -18 + (n-1) \cdot -8$

12) Common Difference: $d = 100$
First Five Terms: $-33,\ 67,\ 167,\ 267,\ 367$
Explicit: $a_n = -33 + (n-1) \cdot 100$

13) Common Difference: $d = -30$
First Five Terms: $-14,\ -44,\ -74,\ -104,\ -134$
Explicit: $a_n = -14 + (n-1) \cdot -30$

14) Common Difference: $d = 100$
First Five Terms: $25,\ 125,\ 225,\ 325,\ 425$
Explicit: $a_n = 25 + (n-1) \cdot 100$

15) Common Difference: $d = -6$
First Five Terms: $2,\ -4,\ -10,\ -16,\ -22$
Recursive: $a_n = a_{n-1} - 6$
$a_1 = 2$

16) Common Difference: $d = 20$
First Five Terms: $-28,\ -8,\ 12,\ 32,\ 52$
Recursive: $a_n = a_{n-1} + 20$
$a_1 = -28$

17) Common Difference: $d = 100$
First Five Terms: $-6,\ 94,\ 194,\ 294,\ 394$
Recursive: $a_n = a_{n-1} + 100$
$a_1 = -6$

18) Common Difference: $d = 100$
First Five Terms: $15,\ 115,\ 215,\ 315,\ 415$
Recursive: $a_n = a_{n-1} + 100$
$a_1 = 15$

19) Common Difference: $d = -20$
First Five Terms: $7,\ -13,\ -33,\ -53,\ -73$
Recursive: $a_n = a_{n-1} - 20$
$a_1 = 7$

20) Common Difference: $d = 9$
First Five Terms: $-19,\ -10,\ -1,\ 8,\ 17$
Recursive: $a_n = a_{n-1} + 9$
$a_1 = -19$

21) Common Difference: $d = -7$
$a_{52} = -348$
Explicit: $a_n = 16 - 7n$
Recursive: $a_n = a_{n-1} - 7$
$a_1 = 9$

22) Common Difference: $d = -10$
$a_{52} = -484$
Explicit: $a_n = 36 - 10n$
Recursive: $a_n = a_{n-1} - 10$
$a_1 = 26$

23) Common Difference: $d = -3$
$a_{52} = -131$
Explicit: $a_n = 25 - 3n$
Recursive: $a_n = a_{n-1} - 3$
$a_1 = 22$

24) Common Difference: $d = -10$
$a_{52} = -470$
Explicit: $a_n = 50 - 10n$
Recursive: $a_n = a_{n-1} - 10$
$a_1 = 40$

25) $a_{52} = 5063$
Explicit: $a_n = -37 + (n-1) \cdot 100$
Recursive: $a_n = a_{n-1} + 100$
$a_1 = -37$

26) $a_{52} = 437$
Explicit: $a_n = 29 + (n-1) \cdot 8$
Recursive: $a_n = a_{n-1} + 8$
$a_1 = 29$

27) $a_{52} = -495$
Explicit: $a_n = -36 + (n-1) \cdot -9$
Recursive: $a_n = a_{n-1} - 9$
$a_1 = -36$

28) $a_{52} = -526$
Explicit: $a_n = -16 + (n-1) \cdot -10$
Recursive: $a_n = a_{n-1} - 10$
$a_1 = -16$

29) $a_{52} = 10177$
Explicit: $a_n = -23 + (n-1) \cdot 200$
Recursive: $a_n = a_{n-1} + 200$
$a_1 = -23$

30) $a_{52} = -339$
Explicit: $a_n = 18 + (n-1) \cdot -7$
Recursive: $a_n = a_{n-1} - 7$
$a_1 = 18$

31) $a_{52} = 414$
Explicit: $a_n = 6 + (n-1) \cdot 8$
Recursive: $a_n = a_{n-1} + 8$
$a_1 = 6$

32) $a_{52} = -112$
Explicit: $a_n = -10 + (n-1) \cdot -2$
Recursive: $a_n = a_{n-1} - 2$
$a_1 = -10$