3-4 Additional Practice

Arithmetic Sequences

Name Key

Tell whether or not each sequence is an arithmetic sequence. If it is an arithmetic sequence, give the common difference.

1. 4, 8, 12, 16, ...

is arithmetic

$d = 4$

2. −11, 5, 0, 6, ...

is not arithmetic

3. 12, 23, 34, 45, ...

is arithmetic

$d = 11$

Write a recursive formula and an explicit formula for each arithmetic sequence.

4. 9, 15, 21, 27, ...

Recursive:

$a_1 = 9$

$a_n = a_{n-1} + 6$

Explicit:

$a_n = 9 + (n-1) \cdot 6$

$a_n = 9 + 6n - 6$

$a_n = 3 + 6n$

5. 1.5, 2.25, 3, 3.75, ...

Recursive:

$a_1 = 1.5$

$a_n = a_{n-1} + 0.75$

Explicit:

$a_n = 1.5 + (n-1) \cdot 0.75$

$a_n = 1.5 + 0.75n - 0.75$

$a_n = 0.75 + 0.75n$

6. 7, 0, −7, −14, ...

Recursive:

$a_1 = 7$

$a_n = a_{n-1} - 7$

Explicit:

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

$a_n = 7 - 7n + 7$

$a_n = 14 - 7n$

Write an explicit formula for each recursive formula and a recursive formula for each explicit formula.

7. $a_1 = 5$

$a_n = a_{n-1} + 3$

$a_n = 2 + 3n$

8. $a_1 = -8$

$a_n = a_{n-1} - 3$

$a_n = -5 - 3n$

9. $a_n = 15 + 4n$

$a_1 = 19$

$a_n = a_{n-1} + 4$

10. You open a savings account with a $400 deposit. Each month after that, you deposit $25. Write an explicit rule to represent the amount of money you deposit into your savings account. How much money will you have in the account in month 12?

$a_n = 400 + 25n$

$a_{12} = 400 + 25(12)$

$= 700$

There will be $700 after 12 months