

Arithmetic Sequences & Series

recursive form

$$\begin{cases} a_1 = \text{First Term} \\ a_n = a_{n-1} + d \end{cases}$$

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explicit form

$$a_n = a_1 + d(n-1) \quad \text{Best form}$$

$$a_n = a_0 + d(n) \quad \text{look familiar?}$$

arithmetic series

$$S_n = (\text{First Term} + \text{Last Term}) \frac{n}{2}$$

Write the recursive form of this arithmetic sequence (aka arithmetic progression) and write the first 4 terms

$$a_1 = 18 \quad d = 7$$

$$a_1 = -7 \quad \text{and} \quad d = -3$$

Write the explicit form of this A.P. and find the indicated term

$$11, 15, 19, 23, \dots \quad \text{Find } a_{21}$$

$$8.6, 8.3, 8, 7.7, \dots \quad \text{Find } a_{31}$$

Write the arithmetic series in
Sigma notation

$$\textcircled{a} \quad -7 + 2 + 11 + 20$$

$$\textcircled{b} \quad 8 + 3 + (-2) + (-7) + \dots$$

$$\textcircled{c} \quad 15 + 19 + 23 + 27 + \dots + 179$$

Find the sum of \textcircled{a} and \textcircled{c}

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HA2 Lessons 14.1-14.3 Form A

[After p. 360]

Write the next three terms in the A.P.

1. 3, 4.4, 5.8, 7.2, ...

Write the first four terms of the A.P. whose first term, a , and common difference, d , are given.

2. $a = 9$ and $d = -5$
3. $a = 3$ and $d = 2 + \sqrt{7}$

Find the specified term of each A.P.

4. 21st term of 3, 7, 11, 15, ...
5. 36th term of 7, 2, -3, -8, ...

[After p. 363]

Find the indicated number of arithmetic means between each pair of numbers.

6. Two between 63 and 37
7. Four between -2 and 18

Find the arithmetic mean of each pair of numbers.

8. 7 and 25 9. $\sqrt{1}$ and $5\sqrt{7}$

[After p. 367]

Find the sum of each arithmetic series for the given data.

10. $n = 30$, $a = 4$, $l = 120$
11. $n = 43$; $6 + 6.2 + 6.4 + 6.6 + \dots$

Write each arithmetic series using Σ -notation.

12. $5 + 10 + 15 + 20$
13. $7 + 11 + 15 + 19 + \dots + 51$

Cumulative Review [After p. 367]

Given $f(x) = 5x - 2$, find the following.

1. $f(-3)$ 2. $f(a + 4)$ 3. $f(f(2))$

Answers

$$(1) \quad 8.6, 10, 11.4 \quad \begin{cases} a_1 = 8.6 \\ a_n = a_{n-1} + 0.4 \end{cases}$$

$$(2) \quad 9, 4, -1, -6 \quad \begin{cases} a_1 = 9 \\ a_n = a_{n-1} - 5 \end{cases}$$

$$(3) \quad 3, 5 + \sqrt{7}, 7 + 2\sqrt{7}, 9 + 3\sqrt{7} \quad \begin{cases} a_1 = 3 \\ a_n = a_{n-1} + (\sqrt{7}) \end{cases}$$

$$(4) \quad a_n = 3 + 4(n-1) \quad a_{21} = 83$$

$$(5) \quad a_n = 7 - 5(n-1) \quad a_{36} = -168$$

Skip $6 + 7 + 8 + 9$

$$(10) \quad 1860$$

$$(12) \quad \sum_{k=1}^4 5k$$

$$(13) \quad \sum_{k=1}^{12} (4k + 3)$$

$$(17) \quad 438.6$$