

Introduction to Algebra

Solution

17. (a) The next two terms are 25 and 30.
 (b) The next two terms are -2 and 0 .
 (c) The next two terms are 102 and 90.

18. (a) The first term $= 5 - 3 \times 1$
 $= 2$

The 2nd term $= 5 - 3 \times 2$
 $= -1$

(b) The first term $= \frac{1}{-3(1)}$
 $= -\frac{1}{3}$

The 2nd term $= \frac{1}{-3(2)}$
 $= -\frac{1}{6}$

19. (a) 1, 4, 9, 16, 25
 (b) 1, 3, 6, 10, 15
 (c) 1, 1, 2, 3, 5

20. (a) $a_1 = 0 = 1 - 1$
 $a_2 = 1 = 2 - 1$
 $a_3 = 2 = 3 - 1$
 $a_4 = 3 = 4 - 1$
 \vdots
 $a_n = n - 1$

\therefore The general term of the sequence is $a_n = n - 1$.

(b) $a_1 = 4 = 4 \times 1$
 $a_2 = 8 = 4 \times 2$
 $a_3 = 12 = 4 \times 3$
 $a_4 = 16 = 4 \times 4$
 \vdots
 $a_n = 4 \times n = 4n$

\therefore The general term of the sequence is $a_n = 4n$.

(c) $a_1 = 4 = 4^1$
 $a_2 = 16 = 4 \times 4 = 4^2$
 $a_3 = 64 = 4 \times 4 \times 4 = 4^3$
 $a_4 = 256 = 4 \times 4 \times 4 \times 4 = 4^4$
 \vdots
 $a_n = 4^n$

\therefore The general term of the sequence is $a_n = 4^n$.

(d) $a_1 = \frac{1}{2} = \frac{1}{1+1}$
 $a_2 = \frac{1}{3} = \frac{1}{2+1}$
 $a_3 = \frac{1}{4} = \frac{1}{3+1}$
 $a_4 = \frac{1}{5} = \frac{1}{4+1}$
 \vdots
 $a_n = \frac{1}{n+1}$

\therefore The general term of the sequence is $a_n = \frac{1}{n+1}$.

21. (a) 1, 3, 5, 7, ...

\therefore General term is $2n - 1$.

(b) 1, 3, 6, 10, ...
 \therefore General term is $\frac{(n+1)n}{2}$.

(c) 3, 8, 15, 24, ...
 $= 2^2 - 1, 3^2 - 1, 4^2 - 1, 5^2 - 1, \dots$
 \therefore General term is $(n+1)^2 - 1$.