Arithematic Progressions Ex 19.4 Q31

Here,

$S_n = 3n^2$ ---(i) [Given]

Where $n$ is number of term

$\therefore \quad S_n = \frac{n}{2}\left[2a + (n-1)d\right]$ ---(ii)

From (i) and (ii)

$3n^2 = \frac{n}{2}\left[2a + (n-1)d\right]$

$6n = 2a + nd - d$

Equating both sides

$6n = nd$

$\therefore \quad d = 6$ ---(iii)

and

$0 = 2a - d$

or $d = 2a$ ---(iv)

From (iii) and (iv)

$a = 3$ and $d = 6$

$\therefore$ The required A.P is $3, 9, 15, 21, \ldots, \infty$

Arithematic Progressions Ex 19.4 Q32

$S_n = nP + \frac{1}{2}n(n-1)Q$ [Given]

$S_n = \frac{n}{2}\left[2P + (n-1)Q\right]$ ---(i)

We know

$S_n = \frac{n}{2}\left[2a + (n-1)d\right]$ ---(ii)

Where $a$ = first term and $d$ = common difference comparing (i) and (ii)

$d = Q$

$\therefore$ The common difference is $Q$.

Arithematic Progressions Ex 19.4 Q33

Let sum of $n$ terms of two A.P be $S_n$ and $S'n$.

Then, $S_n = 5n + 4$ and $S'_n = 9n + 16$ respectively.

Then, if ratio of sum of $n$ terms of 2A.P is giben, then the ratio of there $n$th ther is obtained by replacing $n$ by $(2n-1)$.

$$\frac{a_n}{a_n'} = \frac{5(2n-1)+4}{9(2n-1)+16}$$

$\therefore$ Ratio of there 18th term is

$$\frac{a_{18}}{a'_{18}} = \frac{5(2\times 18-1)+4}{9(2\times 18-1)+16}$$

$$= \frac{5\times 35+4}{9\times 35+16}$$

$$= \frac{179}{321}$$

## Arithematic Progressions Ex 19.4 Q34

Let sum of $n$ term of 1 A.P series be $S_n$ are other $S_n$

The, $S_n = 7n+2$ ---(i).

$S_n = n+4$ ---(ii)

If the ratio of sum of $n$ terms of 2 A.P is given, then the ratio of there $n$th term is obtained by replacing n by $(2n-1)$.

$$\frac{a_n}{a_n'} = \frac{7(2n-1)+2}{(2n-1)+4}$$

Putting $n = 5$ to get the ratio of 5th term, we get

$$\frac{a_5}{a'5} = \frac{7(2\times 5-1)+2}{(2\times 5-1)+4} = \frac{65}{13} = \frac{5}{1}$$

The ratio is 5 : 1.

********** END **********