



Arithmetic Progressions Ex 19.4 Q15

Sum first  $n$  terms of the given AP is

$$S_n = 3n^2 + 2n$$

$$S_{n-1} = 3(n-1)^2 + 2(n-1)$$

$$a_n = S_n - S_{n-1}$$

$$a_n = 3n^2 + 2n - 3(n-1)^2 - 2(n-1)$$

$$a_n = 6n - 1$$

$$a_r = 6r - 1$$

$r^{\text{th}}$  term is  $6r - 1$ .

Arithmetic Progressions Ex 19.4 Q16

Given,

$$a_1 = -14 = a + 0d \quad \text{--- (i)}$$

$$a_5 = 2 = a + 4d \quad \text{--- (ii)}$$

Solving (i) and (ii)

$$a_1 = a = -14 \text{ and } d = 4$$

Let there be  $n$  terms then sum of these  $n$  terms = 40

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

$$\Rightarrow 40 = \frac{n}{2} [-28 + (n-1)4]$$

$$\Rightarrow 4n^2 - 32n - 80 = 0$$

$$\text{or } n = 10 \text{ or } -2$$

But  $n$  can't be negative

$$\therefore n = 10$$

The given A.P has 10 terms.

Arithmetic Progressions Ex 19.4 Q17

Given,

$$a_7 = 10$$

$$S_{14} - S_7 = 17 \quad \text{---(i)}$$

$$\therefore S_{14} = 17 + S_7 = 17 + 10 = 27 \quad \text{---(ii)}$$

From (i) and (ii)

$$S_7 = \frac{7}{2}[2a + (7-1)d] \quad \left[ \text{Using } S_n = \frac{n}{2}[2a + (n-1)d] \right]$$

$$\Rightarrow 10 = 7a + 21d \quad \text{---(iii)}$$

and

$$S_{14} = \frac{14}{2}[2a + 13d]$$

$$\Rightarrow 27 = 28a + 182d \quad \text{---(iv)}$$

Solving (iii) and (iv)

$$a = 1 \text{ and } d = \frac{1}{7}$$

$\therefore$  The required A.P is

$$1, 1 + \frac{1}{7}, 1 + \frac{2}{7}, 1 + \frac{3}{7}, \dots, +\infty$$

$$\text{or } 1, \frac{8}{7}, \frac{9}{7}, \frac{10}{7}, \frac{11}{7}, \dots, \infty$$

Arithmetic Progressions Ex 19.4 Q18

Given,

$$a_3 = 7 = a + 2d \quad \text{---(i)}$$

$$a_7 = 3a_3 + 2$$

$$\therefore a_7 = 3(7) + 2 \quad [\because a_3 = 7]$$

$$= 23 = a + 6d \quad \text{---(ii)}$$

solving (i) and (ii)

$$a = -1, d = 4$$

Then, sum of 20 terms of this A.P

$$\Rightarrow S_{20} = \frac{20}{2}[2 + (20-1)4] \quad \left[ \text{Using } S_n = \frac{n}{2}[2a + (n-1)d] \right]$$

$$= 10 \times 74$$

$$= 740$$

First term is  $-1$  common difference  $= 4$ , sum of 20 terms  $= 740$ .

\*\*\*\*\* END \*\*\*\*\*