



Arithmetic Progressions Ex 9.3 Q4

Answer :

In the given problem, we are given an A.P.

We need to find the number of terms present in it

So here we will find the value of n using the formula, $a_n = a + (n-1)d$

(i) Here, A.P is 7,10,13,...,43

The first term (a) = 7

The last term (a_n) = 43

Now,

Common difference (d) = $a_1 - a$

$$= 10 - 7$$

$$= 3$$

Thus, using the above mentioned formula, we get,

$$43 = 7 + (n-1)3$$

$$43 - 7 = 3n - 3$$

$$36 + 3 = 3n$$

$$n = \frac{39}{3}$$

$$n = 13$$

Thus, $n = 13$

Therefore, the number of terms present in the given A.P is 13

(ii) Here, A.P is $-1, -\frac{5}{6}, -\frac{2}{3}, -\frac{1}{2}, \dots, \frac{10}{3}$

The first term (a) = -1

The last term (a_n) = $\frac{10}{3}$

Now,

Common difference (d) = $a_1 - a$

$$= -\frac{5}{6} - (-1)$$

$$= -\frac{5}{6} + 1$$

$$= \frac{-5+6}{6}$$

$$= \frac{1}{6}$$

Thus, using the above mentioned formula, we get,

$$\frac{10}{3} = -1 + (n-1)\frac{1}{6}$$

$$\frac{10}{3} + 1 = \frac{1}{6}n - \frac{1}{6}$$

$$\frac{13}{3} + \frac{1}{6} = \frac{1}{6}n$$

Further solving for n , we get

$$\frac{26+1}{6} = \frac{1}{6}n$$

$$n = \frac{27}{6}(6)$$

$$n = 27$$

Thus, $n = 27$

Therefore, the number of terms present in the given A.P is 27

(iii) Here, A.P is 7,13,19,....205

The first term (a) = 7

The last term (a_n) = 205

Now,

Common difference (d) = $a_1 - a$

$$= 13 - 7$$

$$= 6$$

Thus, using the above mentioned formula, we get,

$$205 = 7 + (n-1)6$$

$$205 - 7 = 6n - 6$$

$$198 + 6 = 6n$$

$$n = \frac{204}{6}$$

$$n = 34$$

Thus, $n = 34$

Therefore, the number of terms present in the given A.P is 34

(iv) Here, A.P is $18, 15\frac{1}{2}, 13, \dots, -47$

The first term (a) = 18

The last term (a_n) = -47

Now,

Common difference (d) = $a_1 - a$

$$= 15\frac{1}{2} - 18$$

$$= \frac{31}{2} - 18$$

$$= \frac{31 - 36}{2}$$

$$= -\frac{5}{2}$$

Thus, using the above mentioned formula, we get,

$$-47 = 18 + (n-1)\left(-\frac{5}{2}\right)$$

$$-47 - 18 = -\frac{5}{2}n + \frac{5}{2}$$

$$-65 - \frac{5}{2} = -\frac{5}{2}n$$

Further, solving for n , we get

$$\frac{-130 - 5}{2} = -\frac{5}{2}n$$

$$-\frac{135}{2}(2) = -5n$$

$$n = \frac{-135}{-5}$$

$$n = 27$$

Thus, $n = 27$

Therefore, the number of terms present in the given A.P is 27.

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