



Arithmetic Progressions Ex 9.1 Q3

Answer :

In the given problem, we are given the first, second term and the n^{th} term of an A.P.

We need to find its next five terms

$$(i) a_1 = 1, a_n = a_{n-1} + 2, n \geq 2$$

Here, we are given that $n \geq 2$

So, the next five terms of this A.P would be a_2, a_3, a_4, a_5 and a_6

$$\text{Now } a_1 = 1 \dots\dots (1)$$

So, to find the a_2 term we use $n = 2$, we get,

$$a_2 = a_{2-1} + 2$$

$$a_2 = a_1 + 2$$

$$a_2 = 1 + 2 \text{ (Using 1)}$$

$$a_2 = 3 \dots\dots (2)$$

For a_3 , using $n = 3$, we get,

$$a_3 = a_{3-1} + 2$$

$$a_3 = a_2 + 2$$

$$a_3 = 3 + 2 \text{ (Using 2)}$$

$$a_3 = 5 \dots\dots (3)$$

For a_4 , using $n = 4$, we get,

$$a_4 = a_{4-1} + 2$$

$$a_4 = a_3 + 2$$

$$a_4 = 5 + 2 \text{ (Using 3)}$$

$$a_4 = 7 \dots\dots (4)$$

For a_5 , using $n = 5$, we get,

$$a_5 = a_{5-1} + 2$$

$$a_5 = a_4 + 2$$

$$a_5 = 7 + 2 \text{ (Using 4)}$$

$$a_5 = 9 \dots\dots (5)$$

For a_6 , using $n = 6$, we get,

$$a_6 = a_{6-1} + 2$$

$$a_6 = a_5 + 2$$

$$a_6 = 9 + 2 \text{ (Using 5)}$$

$$a_6 = 11$$

Therefore, the next five terms, of the given A.P are

$$\boxed{a_2 = 3, a_3 = 5, a_4 = 7, a_5 = 9, a_6 = 11}$$

$$(ii) a_1 = a_2 = 2, a_n = a_{n-1} - 3, n > 2$$

Here, we are given that $n > 2$

So, the next five terms of this A.P would be a_3, a_4, a_5, a_6 and a_7

$$\text{Now } a_1 = a_2 = 2 \dots\dots (1)$$

So, to find the a_3 term we use $n = 3$, we get,

$$a_3 = a_{3-1} - 3$$

$$a_3 = a_2 - 3$$

$$a_3 = 2 - 3 \text{ (Using 1)}$$

$$a_3 = -1 \dots\dots (2)$$

For a_4 , using $n = 4$, we get,

$$a_4 = a_{4-1} - 3$$

$$a_4 = a_3 - 3$$

$$a_4 = -1 - 3 \text{ (Using 2)}$$

$$a_4 = -4 \dots\dots (3)$$

For a_5 , using $n = 5$, we get,

$$a_5 = a_{5-1} - 3$$

$$a_5 = a_4 - 3$$

$$a_5 = -4 - 3 \text{ (Using 3)}$$

$$a_5 = -7 \dots\dots (4)$$

For a_6 , using $n = 6$, we get,

$$a_6 = a_{6-1} - 3$$

$$a_6 = a_5 - 3$$

$$a_6 = -7 - 3 \text{ (Using 4)}$$

$$a_6 = -10 \dots\dots (5)$$

For a_7 , using $n = 7$, we get,

$$a_7 = a_{7-1} - 3$$

$$a_7 = a_6 - 3$$

$$a_7 = -10 - 3 \text{ (Using 5)}$$

$$a_7 = -13$$

Therefore, the next five terms, of the given A.P are

$$\boxed{a_3 = -1, a_4 = -4, a_5 = -7, a_6 = -10, a_7 = -13}$$

***** END *****