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Question 1

Write the first terms of each of the following sequences whose n^{th} term are

$$(i)a_n=3n+2$$

$$(ii)a_n = \frac{n-2}{3}$$

$$(iii)a_n = 3^n$$

$$(iv)a_n=\frac{3n-2}{5}$$

$$(v)a_n = (-1)^n 2^n$$

$$(vi)a_n=\frac{n(n-2)}{2}$$

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

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

$$(ix)a_n=\frac{2n-3}{6}$$

Question 2

Find the indicated terms in each of the following sequences whose nth terms are:

(i)
$$a_n = 5n - 4$$
; a_{12} and a_{15}
(ii) $a_n = \frac{3n - 2}{4n + 5}$; a_7 and a_8
(iii) $a_n = n(n - 1)(n - 2)$; a_5 and a_8
(iv) $a_n = (n - 1)(2 - n)(3 + n)$; a_{11} a_{21} a_3
(v) $a_n = (-1)^n n$; a_3 , a_5 , a_8 .

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Question 3

For the following arithmetic progressions write the first term a and the common difference d: (i) 5, 1,3,7,......

- (ii) 1 3 5 7 , , , , 5 5 5 5
- (iii)0.3, 0.55, 0.80,1.05,...... (iv) 1.1, 3.1, 5.1, 7.1,...

Question 4

Write the arithmetic progressions write first term a and common difference d are as follows:

$$(i)a = 4, d = -3$$

 $(ii)a = -1, d = \frac{1}{2}$
 $(iii)a = -1.5, d = -0.5$

Question 5

Show that the sequence defined by $a_n = 5n - 7$ is an A.P., find its common difference.

Question 6

Show that the sequence defined by $a_n = 3n^2 - 5$ is not an A.P.

Question 7

The general term of a sequence is given by $a_n = -4n + 15$. Is the sequence an A.P.? If so, find its 15th term and the common difference

Question 8

Find

- (i) 10th term of the AP 1, 4, 7, 10
- (ii) 18^{th} term of the AP $\sqrt{2}$, $3\sqrt{2}$, $5\sqrt{2}$,.....
- (iii) n^{th} term of the AP 13, 8, 3, -2,.....
- (iv) 10^{th} term of the AP $-40, -15, 10, 35, \dots$
- (v) 8thterm of the AP 11, 104, 91, 78
- (vi) 11th term of the AP 10.0, 10.5, 11.0, 11.2

(vii)
$$9^{th}$$
 term of the AP $\frac{3}{5}$, $\frac{5}{4}$, $\frac{7}{9}$ + $\frac{9}{4}$, ...

Question 9

If 9th term of an A.P. is zero, prove that its 29th term is double the 19th term.

Question 10

If 10 times the 10th term of an A.P. is equal to 15 times the 15th term, show that 25th term of the A.P. is zero.

Question 11

The 10th and 18th terms of an A.P. are 41 and 73 respectively. Find 26th term.

Question 12

In a certain A.P. the 24^{th} term is twice the 10^{th} term. Prove that the 72^{nd} term is twice the 34^{th} term.

Question 13

If $(m+1)^{th}$ term of an A.P. is twice the $(n+1)^{th}$ term, prove that $(3m+1)^{th}$ term is twice the $(m+n+1)^{th}$ term.

Question 14

If the n term of the A.P. 9, 7, 5, ... is same as the th term of the A.P. 15, 12, 9, ... find n.

Question 15

Find the second term and nth term of an A.P. whose 6th term is 12 and the 8th term is 22.

Question 16

How many multiples of 4 lie between 10 and 250?

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Question 17

How many three-digit numbers are divisible by 7?

Question 18

Which term of the arithmetic progression 8, 14, 20, 26, . . . will be 72 more than its 41st term?

Question 19

Find the sum of the following APs.

- (i) 2, 7, 12,...., to 10 terms.
- (ii) -37, -33, -29,..., to 12 terms
- (iii) 0.6, 1.7, 2.8 ,....., to 100 terms

$$(iv)\,\frac{1}{15},\frac{1}{12},\frac{1}{10}\dots\dots,to\;11\;terms$$

Question 20

How many terms of the AP. 9, 17, 25 ... must be taken to give a sum of 636?

Question 21

The first term of an AP is 5, the last term is 45 and the sum is 400.

Find the number of terms and the common difference.

Question 22

The first and the last term of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?

Question 23

Find the sum of first 22 terms of an AP in which d = 7 and 22nd term is 149.

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Question 24

Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.

Question 25

If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.

Question 26

Show that $a_1, a_2 \ldots, a_n$, ... form an AP where an is defined as below

$$(i) a_n = 3 + 4n$$

$$(ii) a_n = 9 - 5n$$

Also find the sum of the first 15 terms in each case.

Question 27

If the sum of the first n terms of an AP is $4n - n^2$, what is the first term (that is s_1)? What is the sum of first two terms? What is the second term? Similarly find the 3^{rd} , the 10^{th} and the n^{th} terms.

Question 28

Find the sum of first 15 multiples of 8.

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