MATHEMATICS

STD-10
Class-10

10/7/2020
FRIDAY

Assignment and Notes

Answers of 28th page

1) Since the sum of the first five terms is 30,

$\therefore$ 30 is 5 times the middle number.

$n = 5$

$$\text{mid term} = \frac{\text{Sum}}{\text{no. of terms}} = \frac{30}{5} = \underline{6}$$

$\therefore$ 4, 5, 6, 7, 8, ...

2, 4, 6, 8, 10, ...

-2, 2, 6, 10, 14, ...

2) Sum = 100 (given)

$$x_1 + x_2 + x_3 + x_4 = 100$$

$$2(x_1 + x_4) = 100$$

$$1 + x_4 = \frac{100}{2} = 50$$

$$x_4 = 50 - 1 = \underline{49}$$

$$d = \frac{49 - 1}{4 - 1} = \frac{48}{3} = \underline{16}$$

1, 17, 33, 49, ...

3) Let x be the first term and d be the common difference of the arithmetic sequence.

$\therefore$ first 4 terms $= x, x+d, x+2d, x+3d$

Sum of the two terms on the two ends

$= x + x + 3d$

$= 2x + 3d$

Sum of the two terms in the middle

$= x + d + x + 2d$

$= x + x + d + 2d$

$= \underline{\underline{2x + 3d}}$

4) Sum of the first four terms $= 100$

Sum of the 1st and 4th terms and sum of the 2nd and 3rd terms are equal.

$\therefore$ 2nd term + 3rd term $= 50$

$\therefore$ • Let $\underline{x_1}, 20, 30, \underline{x_4}$

$d = 30 - 20 = \underline{\underline{10}}$

$\therefore x_1 = 10$

$x_4 = 40$

sequences $= 10, 20, 30, 40, \ldots$

$d = 2 \leftarrow 22, 24, 26, 28, \ldots$

$d = 6 \leftarrow 16, 22, 28, 34, \ldots$

$d = 14 \leftarrow 4, 18, 32, 46, \ldots$

- Sums

1) The expressions for the sum to n terms of some arithmetic sequences are given below. Find the expression for the nth term of each:

i) n^2+2n ii) $2n^2+n$ iii) n^2-2n iv) $2n^2-n$

v) n^2-n

Ans) i) n^2+2n

Sum of the first one term = first term $= 1^2+2\times1$

$= 1+2$

$= \underline{3}$

Sum of the first 2 terms $= 2^2+2\times2$

$= 4+4$

$= \underline{8}$

$f = 3$

$d = 5-3 = 2$

$x_1 + x_2 = 8$

$3 + x_2 = 8,$

$\therefore x_2 = 8-3 = \underline{5}$

$x_1 = 3$

$d = 2$

$\therefore x_n = f + (n-1)d$

$= 3 + (n-1)2$

$= 3 + 2n - 2$

$= \underline{2n+1}$

ii) $2n^2+n$

$x_1 = 2\times1^2+1$

$= 2\times1+1$

$= \underline{\underline{3}}$

$S_2 = 2\times2^2+2$

$= 2\times4+2$

$= 8+2$

$= \underline{\underline{10}}$

$\therefore x_2 = S_2 - x_1$

$= 10-3$

$= \underline{\underline{7}}$

$\therefore d = x_2 - x_1$

$= 7-3$

$= \underline{\underline{4}}$

$\therefore x_n = 3+(n-1)4$

$= 3+4n-4$

$= \underline{\underline{4n-1}}$

iii) n^2-2n

$x_1 = 1^2-2\times1$

$= 1-2$

$= \underline{\underline{-1}}$

$S_2 = 2^2-2\times2$

$= 4-4$

$= \underline{\underline{0}}$

$x_2 = S_2 - x_1$

$= 0--1$

$= \underline{\underline{1}}$

$\therefore d = 1--1$

$= \underline{\underline{2}}$

$\therefore x_n = f+(n-1)d$

$= -1+(n-1)2$

$= -1+2n-2$

$\therefore x_n = \underline{\underline{2n-3}}$

iv) $2n^2-n$

$x_1 = 2\times1^2-1$

$=2-1$

$=1$

$S_2 = 2\times2^2-2$

$=2\times4-2$

$=8-2$

$=6$

$\therefore x_2 = S_2 - x_1$

$=6-1$

$=5$

$\therefore d = 5-1$

$=4$

$\therefore x_n = f+(n-1)d$

$=1+(n-1)4$

$=1+4n-4$

$=4n-3$

v) n^2-n

$x_1 = 1^2-1$

$=0$

$S_2 = 2^2-2$

$=4-2$

$=2$

$\therefore x_2 = S_2 - x_1$

$=2-0$

$=2$

$\therefore d = 2-0$

$=2$

$\therefore x_n = f+(n-1)d$

$=0+(n-1)2$

$=2n-2$

By Muhammed Anas.A
KCP HSS KAVASSERY