28/7/2020
TUESDAY

MATHEMATICS

STD - X
class - 15

Notes

1) The 25th term of an arithmetic sequence is 140 and the 27th term is 166. What is its common difference? what is its 35th term?

Ans)

$x_{25} = 140$

$x_{27} = 166$

$\therefore$ common difference $= d = \frac{\text{term difference}}{\text{position difference}}$

$\therefore$ common difference $= 13$

$= \frac{166 - 140}{27 - 25}$

$= \frac{26}{2}$

$d = \underline{\underline{13}}$

35th term $= x_{27} + 8d$

$= 166 + 8 \times 13$

$= 166 + 104$

$= \underline{\underline{270}}$

2) Sum of the first five terms of an arithmetic sequence is 45. What is the 3rd term? The common difference of the sequence is 4, write the first two terms. write another arithmetic sequence having the sum of the first five term is 45.

Ans) Sum of the first 5 terms = 45

$\therefore 5 \times x_3 = 45$

$\therefore x_3 = \frac{45}{5} = \underline{\underline{9}}$

common difference = d = 4

$\therefore$ the second term = $x_2 = 9 - 4 = \underline{\underline{5}}$

$\therefore$ the first term = $5 - 4 = \underline{\underline{1}}$

$\therefore$ first two terms = $\underline{\underline{1, 5}}$

If the sum of 5 terms is 45

$\therefore$ the third term = $\underline{\underline{9}}$

Another arithmetic sequence = 7, 8, 9, 10, 11, ...

3) a. Find the least and highest 3-digit number which leave a remainder 1 on division by 9.

b. How many 3-digit numbers are there, which leave a remainder one on division by 9?

c. Find the sum of all such numbers.

Ans) a) The least 3-digit number which leave a remainder 1 on division by 9 =

$$99+1 = \underline{100}$$

The highest 3-digit number like this = $999 - 8 = \underline{991}$

b) Let there be n numbers between 100 and 991 with common difference 9.

$$100 + (n-1)9 = 991$$

$$100 + 9n - 9 = 991$$

$$9n = 991 + 9 - 100 = 900$$

$$n = \frac{900}{9} = \underline{100}$$

c) Sum $= \frac{n}{2}$ [first term + last term]

$$= \frac{100}{2} [100 + 991]$$

$$= 50 \times 1091$$

$$= \underline{54550}$$