

Sequence and Series - Class XI

Related Questions with Solutions

Questions

Question: 01

If the arithmetic progression whose common difference is non-zero, the sum of first $3n$ terms is equal to the sum of next n terms. Then, the ratio of the sum of the first $2n$ terms to the sum of next $2n$ terms is.

- A. $\frac{1}{4}$
B. $\frac{1}{5}$
C. $\frac{1}{6}$
D. $\frac{1}{3}$

Solutions

Solution: 01

Let 'a' be the first term and 'd' be the common difference of A.P.

$$\therefore S_{3n} = S_{n[\text{next}]}$$

$$\Rightarrow S_{3n} + S_{3n} = S_{3n} + S_{n[\text{next}]}$$

$$\Rightarrow 2S_{3n} = S_{4n}$$

$$\Rightarrow 2 \times \frac{3n}{2}[2a + (3n - 1)d] = \frac{4n}{2}[2a + (4n - 1)d]$$

$$\Rightarrow 2a = [1 - n]d \dots [i]$$

$$\text{To find: } \frac{S_{2n}}{S_{2n(\text{next})}} = \frac{\frac{2n}{2}[2a + (2n - 1)d]}{\frac{2n}{2}[2(a + (2n + 1 - 1)d) + (2n - 1)d]}$$

$$= \frac{2a + (2n - 1)d}{2a + (6n - 1)d}$$

$$= \frac{(1-n)+(2n-1)}{(1-n)+(6n-1)} \quad \{ \text{from (i)} \}$$

$$= \frac{1}{5}$$

Correct Options

Answer:01

Correct Options: B