

Sequence and Series - Class XI

Past Year JEE Questions

Questions

Question: 01

Let a_1, a_2, a_3, \dots be terms on A.P. If $\frac{a_1+a_2+\dots+a_p}{a_1+a_2+\dots+a_q} = \frac{p}{q}$, $p \neq q$, then $\frac{a_{21}}{a_{41}}$ equals

- A. $\frac{41}{11}$
- B. $\frac{1}{2}$
- C. $\frac{2}{7}$
- D. $\frac{11}{41}$

Solutions

Solution: 01

Explanation

$$\frac{\frac{p}{2}[2a_1+(p-1)d]}{\frac{q}{2}[2a_1+(q-1)d]} = \frac{p}{q}$$

$$\Rightarrow \frac{2a_1+(p-1)d}{2a_1+(q-1)d} = \frac{p}{q}$$

$$\frac{a_1+\left(\frac{p-1}{2}\right)d}{a_1+\left(\frac{q-1}{2}\right)d} = \frac{p}{q}$$

$$\text{For } \frac{a_{21}}{a_{41}} \quad p = 11, \quad q = 41$$

$$\Rightarrow \frac{a_{21}}{a_{41}} = \frac{11}{41}$$