

Answer on Question #38681 – Math - Other

Let d be the common difference of arithmetic sequence, a_i be a member of the sequence.

Sum of the first $3n$ elements:

$$S_{3n} = \frac{3n}{2}(2a_1 + (3n - 1)d)$$

Sum of the next n elements:

$$S_{4n} - S_{3n}$$

Since they are equal, we have:

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

$$2n(2a_1 + (4n - 1)d) = 3n(2a_1 + (3n - 1)d)$$

$$4a_1 + (8n - 2)d = 6a_1 + (9n - 3)d$$

$$2a_1 + (n - 1)d = 0$$

Ratio of sum of the first $2n$ elements and that of the next $2n$ elements:

$$\begin{aligned} \frac{S_{4n} - S_{2n}}{S_{2n}} &= \frac{S_{4n}}{S_{2n}} - 1 = \frac{2n(2a_1 + (4n - 1)d)}{n(2a_1 + (2n - 1)d)} - 1 \\ &= 2 \left(1 + \frac{2nd}{2a_1 + (2n - 1)d} \right) - 1 = 1 + \frac{4nd}{2a_1 + (2n - 1)d} \\ &= 1 + \frac{4nd}{-(n - 1)d + (2n - 1)d} = 1 + \frac{4nd}{nd} = 5 \end{aligned}$$

So the sum of the first $2n$ terms to the next $2n$ terms is 1:5.

ANSWER: A