

NCERT Mathematics Ex 9.4 Q6

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QUESTION 6:

Find the sum to n terms of

$$3 \times 8 + 6 \times 11 + 9 \times 14 + \dots$$

SOLUTION:

Writing the series in terms of summation:

$$\sum_{r=1}^n 3r \times (5 + 3r)$$

$$\sum_{r=1}^n 15r + 9r^2 \quad (1)$$

Using formulas for the sum of n terms (i) and sum of the squares of the n terms (ii)

$$\sum_{r=1}^n r = \frac{n(n+1)}{2} \quad (i)$$

$$\sum_{r=1}^n r^2 = \frac{n(n+1)(2n+1)}{6} \quad (ii)$$

Equation (1) evaluates to

$$\frac{15n(n+1)}{2} + \frac{9n(n+1)(2n+1)}{6}$$

$\frac{3n(n+1)(2n+6)}{2}$
