

SEQUENCES & SERIES (Q 5, PAPER 1)

2006

- 5 (a) The first term of an arithmetic sequence is 17 and the common difference is -8 . Find, in terms of n , an expression for T_n , the n th term.
- (b) The n th term of a geometric series is $T_n = 4\left(\frac{1}{2}\right)^n$.
- (i) Find a , the first term.
- (ii) Find r , the common ratio.
- (iii) Write $4 - S_{10}$ in the form $\frac{1}{2^k}$, $k \in \mathbf{N}$, where S_{10} is the sum of the first ten terms.
- (c) The first three terms of an arithmetic sequence are $h + 3$, $5h - 2$, $6h - 13$ where h is a real number.
- (i) Find the value of h .
- (ii) Hence, write down the value of each of the first three terms.
- (iii) Find the value of the eleventh term.

ANSWERS

5 (a) $T_n = 25 - 8n$

(b) (i) $a = 2$ (ii) $r = \frac{1}{2}$ (iii) $\frac{1}{2^8}$

(c) (i) $h = -2$ (ii) $1, -12, -25$ (iii) $T_{11} = -155$