## Sequences \& Series (Q 5, Paper 1)

## 1996

5 (a) The first two terms of an arithmetic series are given as
$2+8+\ldots \ldots$.
Find
(i) d, the common difference
(ii) $T_{10}$, the tenth term
(iii) the value of $n$ such that $T_{n}=200$
(iv) $S_{16}$, the sum to 16 terms.
(b) The $n$th term, $T_{n}$, of a geometric series is

$$
T_{n}=3^{n-1} .
$$

Find
(i) $T_{1}$, the first term
(ii) $r$, the common ratio
(iii) $S_{n}$, the sum to $n$ terms.

Investigate if

$$
2 S_{n}-T_{n}=2 T_{n}-1 .
$$

Answers
$5 \quad$ (a) (i) 6
(ii) 56
(iii) 34
(iv) 752
(b) (i) 1
(ii) $r=3$
(iii) Yes

