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

2004
5 (a) The first term of an arithmetic sequence is 40 and the common difference is -5 . Write down the first five terms of the sequence.
(b) The $n$th term of an arithmetic series is given by $T_{n}=1+5 n$.
(i) The first term is $a$ and the common difference is $d$.

Find the value of $a$ and the value of $d$.
(ii) Find the value of $n$ for which $T_{n}=156$.
(iii) Find $S_{12}$, the sum of the first 12 terms.
(c) The first term of a geometric series is 1 and the common ratio is -4 .
(i) Write down the first three terms of the series.
(ii) Find $S_{6}$, the sum of the first 6 terms.
(iii) Show that $16 S_{4}-3=S_{6}$, where $S_{4}$ is the sum of the first 4 terms.

## Answers

5 (a) $40,35,30,25,20$
(b) (i) $a=6, d=5$
(ii) 31
(iii) 402
(c) (i) $1,-4,16$
(ii) -819

