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

2001
5 (a) $5,13,21,29, \ldots$. is an arithmetic sequence. Which term of the sequence is 813 ?
(b) The $n$th term of a geometric series is given by $T_{n}=3^{n}$.
(i) What is the value of $a$, the first term?
(ii) What is the value of $r$, the common ratio?
(iii) Show that $S_{10}$, the sum of the first ten terms, is $\frac{3}{2}\left(3^{10}-1\right)$.
(c) The sum of the first n terms of an arithmetic series is given by

$$
S_{n}=4 n^{2}-8 n .
$$

(i) Use $S_{1}$ and $S_{2}$ to find the first term and the common difference.
(ii) Starting with the first term, how many terms of the series must be added to give a sum of 252 ?

## Answers

5 (a) 102
(b) (i) 3
(ii) 3
(c) (i) $a=-4, d=8$
(ii) 9

