

1. In an arithmetic series

- the first term is 16
- the 21st term is 24

(a) Find the common difference of the series.

(2)

(b) Hence find the sum of the first 500 terms of the series.

(2)

(a) Given $u_1 (=a) = 16$
 $u_{21} = 24$

$$u_n = a + (n-1)d \quad \leftarrow \text{not in Formula Book}$$

$$24 = 16 + (21-1)d \quad (1 \text{ mark})$$

$$20d = 8$$

$$d = 0.4 \quad (1 \text{ mark})$$

(b) $S_n = \frac{1}{2} n [2a + (n-1)d]$ \leftarrow from Formula Book

$$S_{500} = \frac{1}{2} (500) [2(16) + (500-1)0.4] \quad (1 \text{ mark})$$

\uparrow
From (a)

$$= 250 [32 + (499)0.4]$$

$$= 57\,900$$

(1 mark)