

9 (a) A geometric series, S , has **second** term 60

The common ratio of S is 0.2

Find the exact value of the sum of the first five terms of S

[4 marks]

9 (b) A different geometric series, T , has **second** term 60 and positive common ratio r

The sum to infinity of T is T_{∞}

9 (b) (i) Show that

$$T_{\infty} = \frac{60}{r - r^2}$$

[2 marks]

9 (b) (ii) Find the maximum value of $r - r^2$

[2 marks]

9 (b) (iii) Hence find the range of possible values of T_{∞}

Fully justify your answer.

[2 marks]