9 The third and fifth terms of a geometric series S are 48 and 768 respectively. Find

(a) the two possible values of the common ratio of S,

(3)

(b) the first term of S.

(1)

Given that the sum of the first 5 terms of S is 615

(c) find the sum of the first 9 terms of S.

(4)

Another geometric series T has the same first term as S. The common ratio of T is $\frac{1}{r}$ where r is one of the values obtained in part (a). The nth term of T is t_n

Given that $t_2 > t_3$

(d) find the common ratio of T.

(1)

The sum of the first n terms of T is T_n

(e) Writing down all the numbers on your calculator display, find T_9

(2)

The sum to infinity of T is T_∞

Given that $T_\infty - T_n > 0.002$

(f) find the greatest value of n.

(5)

Question 9 continued

Question 9 continued

Question 9 continued

(Total for Question 9 is 16 marks)