14. **In this question you must show all stages of your working.**
Solutions relying entirely on calculator technology are not acceptable.

In a geometric series

- the 2nd term is e^{15-6k}
- the 6th term is e^{35-14k}

where k is a constant.

Given that the geometric series is convergent

(a) use algebra to prove that $k > \frac{5}{2}$

(4)

Given also that $S_\infty > 10$

(b) find the range of possible values for k.

(5)