6 When $\ln y$ is plotted against x^3, a straight line passing through the points $(2, 5)$ and $(-8, 25)$ is obtained.

(a) Find y in terms of x. [4]

(b) Find the value of x when $y = e^{25}$. [2]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

7 A geometric progression has a 4th term of $\frac{8k^6}{27}$ and a 6th term of $\frac{32k^{10}}{243}$, where k is a constant.

The common ratio of this geometric progression is positive.

(a) Find the common ratio in terms of k and the value of the first term of this geometric progression. [4]

(b) Given that this geometric progression has a sum to infinity of 3, find the possible values of k. [3]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN