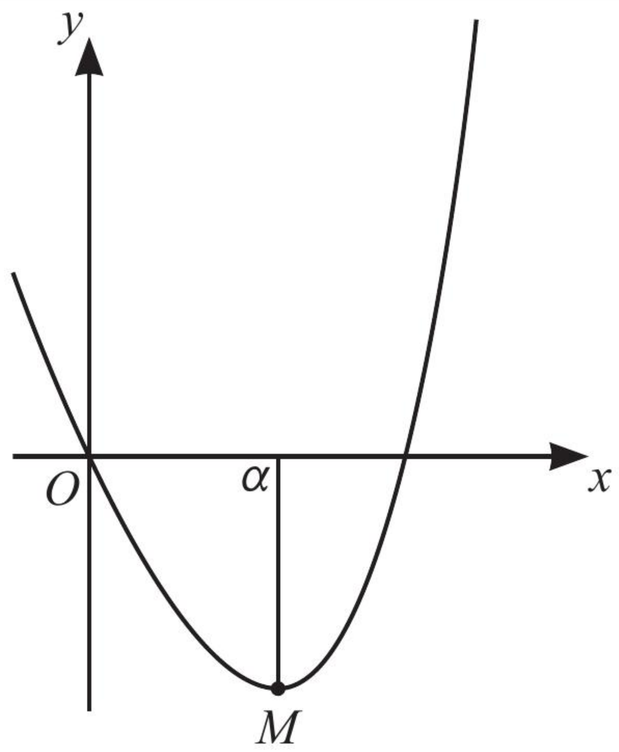

The diagram shows the curve $y = xe^{2x} - 5x$ and its minimum point M, where $x = \alpha$.

(a) Show that α satisfies the equation $\alpha = \frac{1}{2}\ln\left(\frac{5}{1+2\alpha}\right)$. [3]

(b) Verify by calculation that α lies between 0.4 and 0.5 . [2]

(c) Use an iterative formula based on the equation in part **(a)** to determine α correct to 2 decimal places. Give the result of each iteration to 4 decimal places. [3]