

3 (a) Sketch, on a single diagram, the graphs of $y = 3e^{-2x}$ and $y = \sec x$ for values of x such that $0 \leq x < \frac{1}{2}\pi$. [2]

(b) Show that the x -coordinate of the point of intersection of the two graphs satisfies the equation $x = \frac{1}{2}\ln(3\cos x)$. [2]

(c) Use an iterative formula, based on the equation in part (b), to find the x -coordinate of the point of intersection correct to 3 decimal places. Give the result of each iteration to 5 decimal places. [3]