(i) By sketching suitable graphs, show that the equation $e^{-\frac{1}{2}x} = 4 - x^2$ has one positive root and one negative root. [2]

(ii) Verify by calculation that the negative root lies between -1 and -1.5. [2]

(iii) Use the iterative formula $x_{n+1} = -\sqrt{\left(4 - e^{-\frac{1}{2}x_n}\right)}$ to determine this root correct to 2 decimal places. Give the result of each iteration to 4 decimal places. [3]