

(a) By sketching a suitable pair of graphs, show that the equation  $4 - x^2 = \sec \frac{1}{2}x$  has exactly one root in the interval  $0 \leq x < \pi$ . [2]

(b) Verify by calculation that this root lies between 1 and 2. [2]

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

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