

MATH 3940 Numerical Analysis for Computer Scientists
Problem Set 7: Golden Ratio Search Method

1. Let $f(x) = x^4 + 4x^3 + 70$
 - (a) Find local minimum value of f .
 - (b) Can Golden Ratio search method be used to find a local minimum of f starting with the interval $[-5, -1]$? Justify your answer using the conditions of convergence.
2. Let $f(x) = x^4 + 4x^3 + 40$. Perform 3 iterations of the golden ratio search method starting with the interval $[-4, -2]$.
3. Let $f(x) = x^5 - 7\sin x + e^x$. Perform 1 iteration of the golden ratio search method starting with the interval $[-0.1, 1.3]$.