Lecture 15

Optimization: Coding the Golden Section Search Method

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Wrapping up the Golden-Section Search Method

Golden-Section Search Method Pseudocode Example

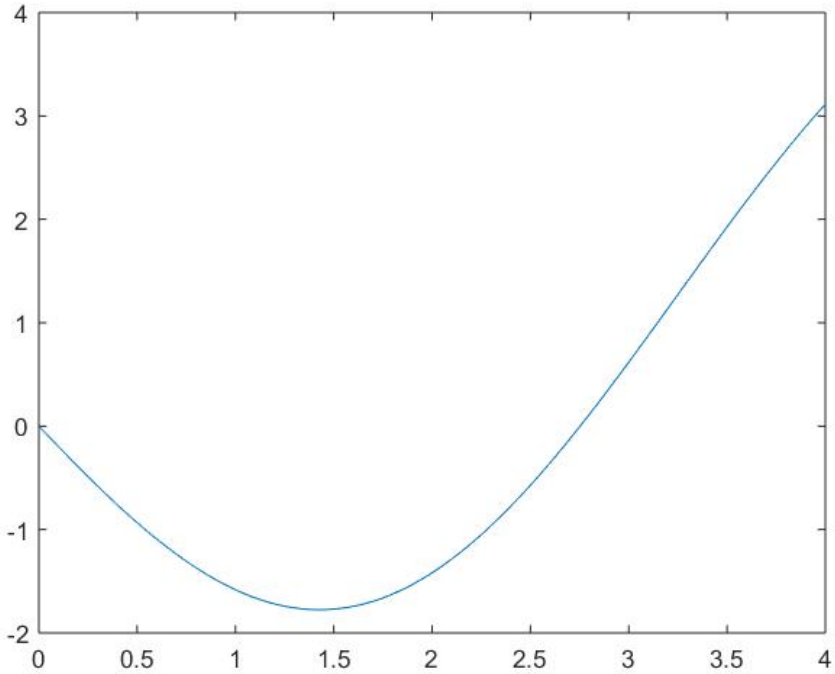
```
define/declare phi
declare tol, x1, x2, d, xopt
declare/define error

d = (phi -1)(xu-xl)
x1 = xl+d;
x2 = xu-d;

while error>tol
    if f(x1)<f(x2)
        xl = x2;
        x2 = x1;
        d = (phi-1)(xu-xl);
        x1 = xl + d;
        xopt = x1;
    else
        xu = x1;
        x1 = x2;
        d = (phi-1)(xu-xl);
        x2 = xu-d;
        xopt = x2;
    error = (2-phi)*abs((xu-xl)/xopt);
```

Let's code it!

We are going to write this function and apply it to

$$f(x) = \frac{x^2}{10} - 2sin(x)$$

With an initial $x_l = 0$, $x_u = 4$. Remembering our plot:



When you have finished your code, post it in the **Golden-Section Search Code** discussion board.