

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 - x1)
x1 = x1 + d;
x2 = xu - d;

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

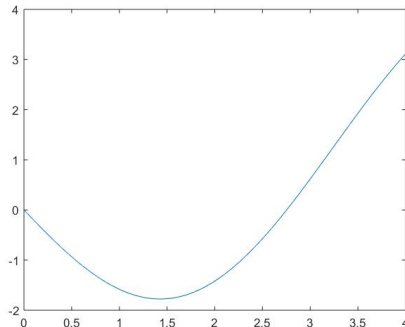


Let's code it!

We are going to write this function and apply it to

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

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.

