

MAT2003 (Optimization Techniques) Lab

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Topic: Golden Search Method

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%% KHAN MOHD OWAIS RAZA (20BCD7138)
%% Optimization Techniques (MAT2003) Lab
%% Date: 10th November 2022
%% Topic: Golden Search Method
clear all
clc
syms x
fx = 0.4/sqrt(1+x^2)-sqrt(1+x^2)*(1-.4/(1+x^2))+x; % Input
maxit = 50;
es = 10^-5;
R = (5^0.5-1)/2;
x = [-10:10];
f = subs(fx,x);
xlow = 0.5;
xhigh = 1.5;
x1 = xlow;
xu = xhigh;
iter = 1;
d = R*(xu-x1);
x1 = x1+d;
x2 = xu-d;
f1 = subs(fx,x1);
f2 = subs(fx,x2);
if f1>f2
    xopt = x1;
else
    xopt = x2;
end
while(1)
    d = R*d;
    if f1>f2
        x1 = x2;
        x2 = x1;
        x1 = x1+d;
        f2 = f1;
        f1 = subs(fx,x1);
    else
        xu = x1;
        x1 = x2;
        x2 = xu-d;
        f1 = f2;
        f2 = subs(fx,x2);
    end
    iter = iter+1;
    if f1>f2
        xopt = x1;
    else
```

```
xopt = x2;  
end  
if xopt~=0  
ea = (1-R)*abs((xu-xl)/xopt)*100;  
end  
if ea<=es||iter>=maxit, break  
end  
end  
Gold = xopt
```

Command Window

Gold =

1.0519

>> |