clc

clear all

f=@(x) x.\*(x-2);

L=0;

R=1.5;

n=6;

t=linspace(L,R,100);

plot(t,f(t))

fib=ones(1,n);

for i=3:n+1

fib(i)=fib(i-1)+fib(i-2);

end

for k=1:n

ratio=fib(n+1-k)/fib(n+2-k);

x2=L+ratio.\*(R-L);

x1=L+R-x2;

fx1=f(x1);

fx2=f(x2);

rs1(k,:)=[L R x1 x2 fx1 fx2];

if fx1<fx2

R=x2;

elseif fx1>fx2

L=x1;

elseif fx1==fx2

if min(abs(x1),abs(L))==abs(L)

R=x2;

else

L=x1;

end

end

end

rs1(k,:)=[L R x1 x2 fx1 fx2];

variables={'L','R','x1','x2','fx1','fx2'};

Resf=array2table(rs1);

Resf.Properties.VariableNames(1:size(Resf,2))=variables

Xopt=(L+R)/2

fopt=f(Xopt)