**Optimization Techniques**

**NAME**: TITHI PATEL

**ENROLLMENT NUMBER: 18BECE30558**

**5 TH SEM CE SHIFT 2**

**PRACTICAL 16 and 17** Write a function for Newton Raphson and Secant Method.

--------------------------------------------------------------------------------------------------------------------------

**Newton Raphson**

function [] = nf(f,df,a)

x=a;

for i=1:1:100

x1=x-(f(x)/df(x));

x=x1;

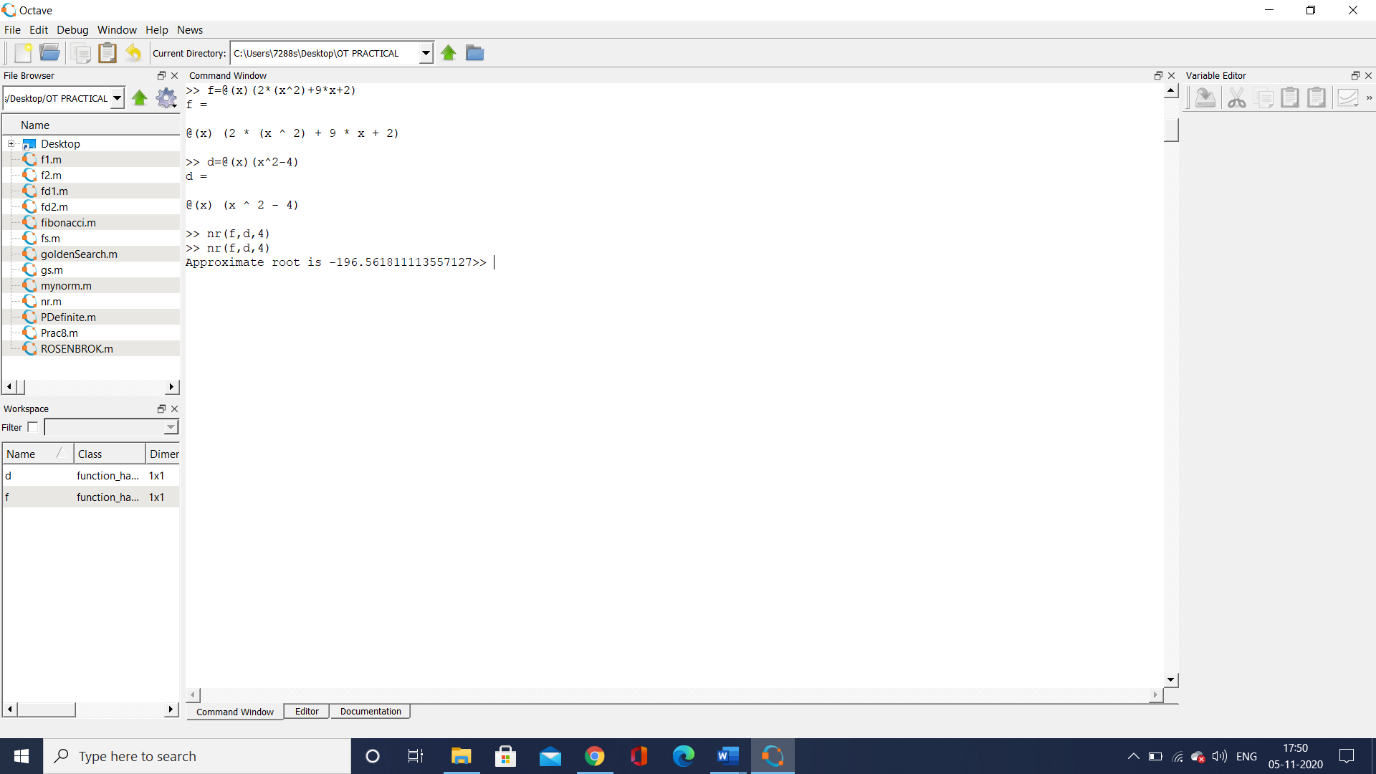
endfor

root=x;

fprintf('Approximate root is %.15f',root);

endfunction

**OUTPUT:**



--------------------------------------------------------------------------------------------------------------------------------------

**Secant Method**

function [] = sec(f, x0, x1, eps)

f\_x0 = f(x0);

f\_x1 = f(x1);

no\_of\_iterations = 0;

while abs(f\_x1) > eps &&no\_of\_iterations < 100

try

denominator = (f\_x1 - f\_x0)/(x1 - x0);

x = x1 - (f\_x1)/denominator;

catch

fprintf('Error! - denominator zero for x = \n', x1)

break

end

x0 = x1;

x1 = x;

f\_x0 = f\_x1;

f\_x1 = f(x1);

no\_of\_iterations =no\_of\_iterations + 1;

end

if abs(f\_x1) > eps

no\_of\_iterations = -1;

end

solution = x1;

no\_iterations =no\_of\_iterations;

if no\_iterations > 0

fprintf('Number of function calls: %d\n', 2 + no\_iterations);

fprintf('A solution is: %f\n', solution)

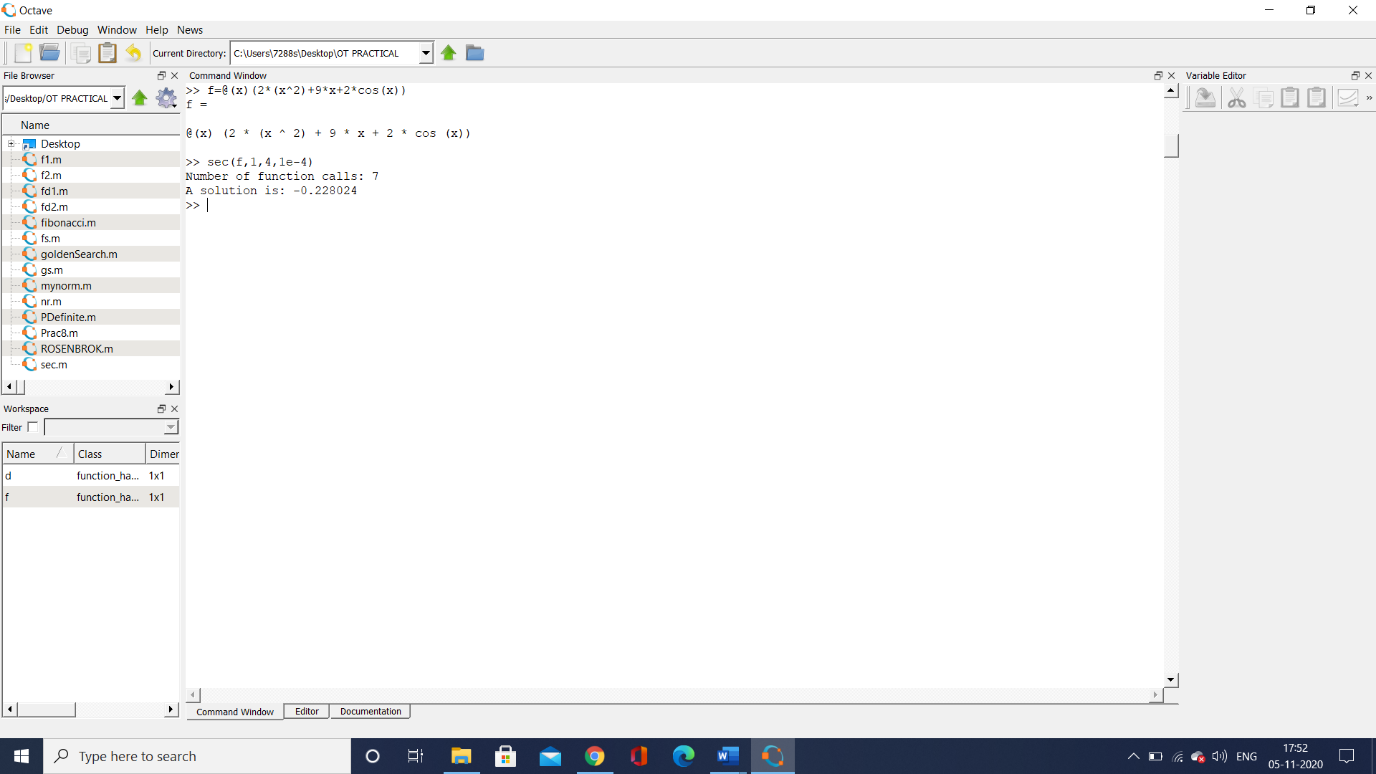
else

fprintf('Stop execution')

end

end

**OUTPUT:**

****--------------------------------------------------------------------------------------------------------------------------------