**Lab Assignment # 2**

1. Write MATLAB programs for **Bisection** and **Newton Raphson's** Method to find solution accurate within 10^-3 for



on each interval **a.** [-2 , -1] **b.** [0 , 2]

bisection:

a.

!bisection method for first interval

a = -2;

b = -1;

y = @(x) x^4 -2\*x^3 - 4\*x^2 + 4\*x + 4;

if y(a) \* y(b) > 0

fprintf ('No root exsist');

return

end

if y(a) == 0

fprintf ('a is root exsist');

return

end

if y(b) == 0

fprintf ('b root exsist');

return

end

for i=1:100

xh = (a+b)/2;

if y(a)\*y(xh)<0

b = xh;

else

a = xh;

end

if abs(y(a))<1.0E-6

break;

end

end

disp(abs(a));disp(i);

b. bisection method for first interval

a = 0;

b = 2;

y = @(x) x^4 -2\*x^3 - 4\*x^2 + 4\*x + 4;

if y(a) \* y(b) > 0

fprintf ('No root exsist');

return

end

if y(a) == 0

fprintf ('a is root exsist');

return

end

if y(b) == 0

fprintf ('b root exsist');

return

end

for i=1:100

xh = (a+b)/2;

if y(a)\*y(xh)<0

b = xh;

else

a = xh;

end

if abs(y(a))<1.0E-6

break;

end

end

disp(a);disp(i);

**Newton Raphson's** Method

a.

tol = 10^-3;

y = @(x) x- (x^4 -2\*x^3 - 4\*x^2 + 4\*x + 4)/(4\*x^3-6\*x^2-8\*x+4)

x = -2;

for i=1:100

xnew = y(x);

if abs(xnew - x)< tol

x = xnew;

else

break;

end

end

disp(a);disp(i);

b.

tol = 10^-3;

y = @(x) x- (x^4 -2\*x^3 - 4\*x^2 + 4\*x + 4)/(4\*x^3-6\*x^2-8\*x+4)

x = 0;

for i=1:100

xnew = y(x);

if abs(xnew - x)< tol

x = xnew;

else

break;

end

end

disp(a);disp(i);