Exercise 1:

### A number.

When x=2,

>> syms x;

y=x^3-3\*x-1;

z=diff(y);

a=2;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

>> fprintf('\nRoot is: %f\n', a)

Root is: 1.879385

When x=0,

>> syms x;

y=x^3-3\*x-1;

z=diff(y);

a=0;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

fprintf('\nRoot is: %f\n', a)

Root is: -0.347296

When x=-2,

>> syms x;

y=x^3-3\*x-1;

z=diff(y);

a=-2;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

>> fprintf('\nRoot is: %f\n', a)

Root is: -1.532089

Exercise 1:

### B number.

>> syms x;

y=x\*sin(x)+cos(x);

z=diff(y);

a=3;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

>> fprintf('\nRoot is: %f\n', a)

Root is: 2.798386

Exercise 1:

### C number.

>> syms x;

y=x-exp(-x);

z=diff(y);

a=2;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

>> fprintf('\nRoot is: %f\n', a)

Root is: 0.567143

Exercise 2:

A number.

>> syms x;

y=x^3-3\*x-1;

z=diff(y);

a=1;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

fprintf('\nRoot is: %f\n', a)

Root is: NaN

B number.

>> syms x;

y=x\*sin(x)+cos(x);

z=diff(y);

a=1;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

fprintf('\nRoot is: %f\n', a)

Root is: 56.530980

C number.

>> syms x;

y=x-exp(-x);

z=diff(y);

a=1;

for i=1:1000

b=a;

fa=eval(subs(y,x,a));

fb=eval(subs(z,x,a));

a=b-(fa/fb);

if(abs(a-b)<0.5\*10^-5)

break;

end

end

>> fprintf('\nRoot is: %f\n', a)

Root is: 0.567143

Exercise 3:

**ROOTS**

**to find all the roots of the given equation,**

>> m=[1 0 -3 -1]

m =

1 0 -3 -1

>> r=roots(m)

r =

1.8794

-1.5321

-0.3473

**FZERO :**

### to find a root of the given equation near x=0 use,

>> n=fzero(@(x)x^3-3\*x-1,0)

n =

-0.3473

### to find a root of the given equation near x=2 use,

>> n=fzero(@(x)x^3-3\*x-1,2)

n =

1.8794

### to find a root of the given equation near x=-2 use,

>> n=fzero(@(x)x^3-3\*x-1,-2)

n =

-1.5321

**FSOLVE**

### to find a root of the given equation near x=0 use,

>> p=fsolve(@(x)x^3-3\*x-1,0)

Equation solved.

fsolve completed because the vector of function values is near zero

as measured by the default value of the function tolerance, and

the problem appears regular as measured by the gradient.

<stopping criteria details>

p =

-0.3473

### to find a root of the given equation near x=2 use,

>> p=fsolve(@(x)x^3-3\*x-1,2)

Equation solved.

fsolve completed because the vector of function values is near zero

as measured by the default value of the function tolerance, and

the problem appears regular as measured by the gradient.

<stopping criteria details>

p =

1.8794

### to find a root of the given equation near x=-2 use,

>> p=fsolve(@(x)x^3-3\*x-1,-2)

Equation solved.

fsolve completed because the vector of function values is near zero

as measured by the default value of the function tolerance, and

the problem appears regular as measured by the gradient.

<stopping criteria details>

p =

-1.5321

Exercise 4:

**ROOTS:**

### **to find all the roots of the given equation** 1)b)**,**

**FZERO :**

### to find a root of the given equation 1)b) near x=3 use,

>> n=fzero(@(x)x\*sin(x)+cos(x),3)

n =

2.7984

**FSOLVE**

### to find a root of the given equation 1)b) near x=3 use,

>> p=fsolve(@(x)x\*sin(x)+cos(x),3)

Equation solved.

fsolve completed because the vector of function values is near zero

as measured by the default value of the function tolerance, and

the problem appears regular as measured by the gradient.

<stopping criteria details>

p =

2.7984

**ROOTS:**

### **to find all the roots of the given equation** 1)c)**,**

**FZERO :**

### to find a root of the given equation 1)c) near x=2 use,

>> n=fzero(@(x)x-exp(-x),2)

n =

0.5671

**FSOLVE**

### to find a root of the given equation 1)c) near x=2 use,

>> p=fsolve(@(x)x-exp(-x),2)

Equation solved.

fsolve completed because the vector of function values is near zero

as measured by the default value of the function tolerance, and

the problem appears regular as measured by the gradient.

<stopping criteria details>

p =

0.5671