DIVISION / ROLL NO.: D1AD/47

Vivekanand Education Society's Institute of Technology (Academic Year 2020-2021)

Subject: Engineering Mathematics- I

Semester: I

TUTORIAL/SCILAB COVER PAGE

TUTORIAL/SCILAB NO :- 01

TUTORIAL TOPIC:- GAUSS JACOBI ITERATION

DATE OF PERFORMANCE/SUBMISSION :- 11-04-2021

NAME OF THE STUDENT: YASH SARANG

SIGNATURE OF TEACHER :- _____

DIVISION: D1AD
ROLL NUMBER: 47
NAME:YASH SARANG
A.Y.: 2020-2021

SCILAB PRACTICAL 1: GAUSS JACOBI ITERATION METHOD

QUESTION:

Using suitable loop, write a sci-lab program to obtain approximate solution using Gauss Jacobi Iteration Method(Correct up to five decimal places)

$$4x+y+3z=17;$$

$$x+5y+2z=14;$$

$$2x-y+8z=12;$$

INPUT CODE:

```
clc
a=[4,1,3;2,-1,8;1,5,2]
b=[17;14;12]
disp('[ab]=')
disp([a b])
disp('no of iteration')
disp(n)
x0=0
y0=0
z0=0
```

```
for i=0:n
x(i+1)=(b(1)-a(1,2)*y0-a(1,3)*z0)/a(1,1)

y(i+1)=(b(2)-a(2,1)*x0-a(2,3)*z0)/a(2,2)

z(i+1)=(b(3)-a(3,1)*x0-a(3,2)*y0)/a(3,3)

x0=x(i+1)

y0=y(i+1)

z0=z(i+1)

end

disp('x=');

disp(x)

disp('y=');

disp(y)

disp('z=');

disp(z)
```

OUTPUT CODE:

```
[ab]=

 4. 1. 3. 17.

 1. 5. 2. 14.

 2. -1. 8. 12.


 no of iteration


 5.
```

x=

4.25

2.425

3.321875

2.953125

3.1326953

3.0579492

y=

2.8

1.35

2.

1.710625

1.8415625

1.7832422

z=

1.5

0.7875

1.0625

0.9195312

0.9755469

0.9470215

DIVISION / ROLL NO.: D1AD/47

Vivekanand Education Society's Institute of Technology (Academic Year 2020-2021)

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TUTORIAL/SCILAB COVER PAGE

TUTORIAL/SCILAB NO :- 02

TUTORIAL TOPIC:- NEWTON RAPHSON METHOD

DATE OF PERFORMANCE/SUBMISSION :- 11-04-2021

NAME OF THE STUDENT: YASH SARANG

SIGNATURE OF TEACHER :- _____

DIVISION: D1AD
ROLL NUMBER: 47
NAME:YASH SARANG
A.Y.: 2020-2021

SCILAB PRACTICAL 2: NEWTON RAPHSON METHOD

QUESTION:

Using suitable loop, write sci-lab program to obtain approximate root in the given interval using Newton Raphson Method (Correct up to five dexcimal places)

e) x^2-28=0 in the interval of [5,6]

INPUT CODE:

```
clc;
deff('[y]=f(x)','y=x^2-28');
deff('[y]=fd(x)','y=2*x');
x=6;x1=5;i=0;
error=0.00001;
disp("x=")
disp(x)
disp("x1=")
disp(x1)
disp("By Newton Raphson Method")
disp("roots")
while(abs(x-x1)>=error)
```

```
y=x-(f(x)/fd(x));
disp(y);

x1=x;

x=y;

i=i+1;

end

disp("No of iteration")

disp(i);
```

OUTPUT CODE:

```
x=

 6.


x1=

 5.


By Newton Raphson Method


roots


 5.3333333

 5.2916667

 5.2915026

 5.2915026
```

No of iteration
4.

DIVISION / ROLL NO.: D1AD/47

Vivekanand Education Society's Institute of Technology (Academic Year 2020-2021)

Subject: Engineering Mathematics- I

Semester: I

TUTORIAL/SCILAB COVER PAGE

TUTORIAL/SCILAB NO :- 033

TUTORIAL TOPIC:- GAUSS SEIDEL ITERATION

DATE OF PERFORMANCE/SUBMISSION :- 11-04-2021

NAME OF THE STUDENT: YASH SARANG

SIGNATURE OF TEACHER :- _____

DIVISION: D1AD
ROLL NUMBER: 47
NAME:YASH SARANG
A.Y.: 2020-2021

SCILAB PRACTICAL 3: GAUSS SEIDEL ITERATION

QUESTION:

Using suitable loop, write a sci-lab program to obtain approximate solution using Gauss Seidel Method (Correct up to five decimal places)

e. 43x+2y+25z=23;

3x+53y+3z=9;

2x-4y+49z=49;

INPUT CODE:

```
clc;
a=[43,2,25;3,53,3;2,-4,49]
b=[23;9;49]
disp('[ab]=')
disp([a b])
n=5
disp('no of iteration')
disp(n)
x0=0
y0=0
z0=0
```

```
for i=0:n
x(i+1)=(b(1)-a(1,2)*y0-a(1,3)*z0)/a(1,1)

y(i+1)=(b(2)-a(2,1)*x(i+1)-a(2,3)*z0)/a(2,2)

z(i+1)=(b(3)-a(3,1)*x(i+1)-a(3,2)*y(i+1))/a(3,3)

x0=x(i+1)

y0=y(i+1)

z0=z(i+1)

end

disp('x=');

disp(x)

disp('y=');

disp(y)

disp('z=');

disp(z)
```

OUTPUT CODE:

```
[ab]=

 43. 2. 25. 23.

 3. 53. 3. 9.

 2. -4. 49. 49.


 no of iteration


 5.
```

x=

0.5348837

-0.046931

-0.0585689

-0.0587907

-0.0587948

-0.0587949

y=

0.1395349

0.116455

0.1158762

0.1158646

0.1158644

0.1158643

z=

0.9895586

1.0114221

1.0118499

1.011858

1.0118581

1.0118581

DIVISION / ROLL NO.: D1AD/47

Vivekanand Education Society's Institute of Technology (Academic Year 2020-2021)

Subject: Engineering Mathematics- I

Semester: I

TUTORIAL/SCILAB COVER PAGE

TUTORIAL/SCILAB NO :- 04

TUTORIAL TOPIC:- REGULA FALSI METHOD

DATE OF PERFORMANCE/SUBMISSION :- 11-04-2021

NAME OF THE STUDENT: YASH SARANG

SIGNATURE OF TEACHER :- _____

DIVISION: D1AD
ROLL NUMBER: 47
NAME:YASH SARANG
A.Y.: 2020-2021

SCILAB PRACTICAL 4: REGULA FALSI METHOD

QUESTION:

Using suitable loop, write a sci-lab program to obtain approximate solution using Regula Falsi Method (Correct up to five decimal places)

e. x^2-41=0 in the interval [6,7]

INPUT CODE:

```
clc;
deff('[y]=f(x)','y=x^2-41')
deff('[y]=fd(x)','y=2*x');
a=6;b=7;
error=0.00001;
disp("a=")
disp(a)
disp("b=")
disp(b)
disp("No of iterations")
disp(i);
disp("By Regular Falsi Method")
disp("Root")
```

```
for i=1:n
c=(a*f(b)-b*f(a))/(f(b)-f(a))

disp([i,c])

if f(a)*f(c)<0 then

b=c

end

c1=(a*f(b)-b*f(a))/(f(b)-f(a));

if abs(c1-c)<0.00001 then

break;

end
```

OUTPUT CODE:

```
a=

 6.


 b=

 7.


 No of iterations


 1.


 By Regula Falsi Method


 Root
```

1. 6.3846154