DIVISION / ROLL NO.: DIAD / 43

Vivekanand Education Society's Institute of Technology

(Academic Year 2020-2021)

Subject: Engineering Mathematics- I

Semester: I

SCILAB COVER PAGE

SCILAB NO :- 1

TUTORIAL TOPIC:- SCILAB (MATHS PRACTICALS)

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

NAME OF THE STUDENT:- MAYUR PIMPUDE

SIGNATURE OF TEACHER :- _____

Scilab practical 1 : Gauss Jacobi Iteration

5) $4x + y + 3z = 17;\ \ 2x - y + 8z = 12;\ \ x + 5y + 2z = 14$

PROGRAM

```
a=input("enter matrix a=")
b=input("enter matrix b=")
disp('[a b]=c')
disp([a b])
n=input("enter n=")
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)
```

ANSWER

```
enter matrix a=[4,1,3;1,5,2;2,-1,8]

enter matrix b=[17;14;12]
  "c=[a b]"

   4.   1.   3.   17.
   1.   5.   2.   14.
   2.  -1.   8.   12.
```

enter n=6

"no. of iteration"

6.

"x="

4.25
2.425
3.321875
2.953125
3.1326953
3.0579492
3.0939233
-0.0586883
-0.0587757

"y="

2.8
1.35
2.
1.710625
1.8415625
1.7832422
1.8096016
0.1158453
0.1158601

"z="

1.5
0.7875
1.0625
0.9195312
0.9755469
0.9470215
0.958418
1.0118266
1.0118522

Scilab practical 2 : Newton Raphson Method

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e) x^2 − 28 = 0 in the interval [5,6]

PROGRAM

```
  clc;
deff('y=f(x)','y=x^2-28');
deff('y=fd(x)','y=2*x');
x=input("enter value of x=")
x1=input("enter value of x1=")
i=0;
error=0.00001;
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);
```

ANSWER

```
enter value of x=5

enter value of x1=6

 "by newton raphson method"

 "Roots"

  5.3
  5.2915094
  5.2915026

 "No of iteration"
```

Scilab practical 3 : Gauss Seidel Iteration

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$2x - 4y + 49z = 49;\ 43x + 2y + 25z = 23;\ 3x + 53y + 3z = 9$

PROGRAM

```
clc;
a=input("enter matrix a=")
b=input("enter matrix b=")
disp('[a b]=c')
disp([a b])
n=input("enter n=")
disp('no. of iteration')
disp(n)
x0=b(1)
y0=0
z0=0
for i=1:n
    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)
    x(i+1)=(b(1)-a(1,2)*y0-a(1,3)*z0)/a(1,1)
    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)
```

ANSWER

enter matrix a=[43,2,25;3,53,3;2,-4,49]

enter matrix b=[23;9;49]

"[a b]=c"

```
   43.   2.    25.   23.
   3.    53.   3.    9.
   2.   -4.    49.   49.
enter n=5


  "no. of iteration"

   5.

  "x="
 5.2915026
   0.5348837
   0.5519428
   0.0135818
  -0.0439849
  -0.0556462

  "y="

5.2915026
  -1.1320755
   0.1360693
   0.0884323
   0.1130852
   0.11532

  "z="

   1.5
   0.0612245
   0.8857537
   0.9885794
   1.0066646
   1.0110267
   0.942041
   1.0118266
   1.0118522
```

Scilab practical 4 : Regula Falsi Method

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x^2 − 41 = 0 in the interval [6,7]

PROGRAM

```
clc;
deff('d=f(x)','d=x^2-41')
a=input("Enter the value of a:")
b=input("Enter the value of b:")
n=input("Enter the number of iterations n:")
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
if f(b)*f(c)<0 then
   a=c
end
c1=(a*f(b)-b*f(a))/(f(b)-f(a))
if abs(c1-c)<0.00001
   break;
   end
end
```

ANSWER

Enter the value of a:6

Enter the value of b:7

Enter the number of iterations n:5

1. 6.3846154
2. 6.4022989

3. 6.4030875

4. 6.4031226