Numerical Analysis using Matlab

Lab\_2 Report

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# Exercise 1:

Solution:-

(pi\*pi)/6 = 1.6449

1. n = [1:100];

Su = sum(1./(n.\*n))

Output: - Su = 1.6350

1. n = [1:1000];

Su = sum(1./(n.\*n))

Output: - Su = 1.6439

1. n = [1:10000];

Su = sum(1./(n.\*n))

Output: - Su = 1.6448

1. n = [1:100000];

Su = sum(1./(n.\*n))

Output: - Su = 1.6449

As the value of n increases the expression sum(1/n2) tends toward exact value.

# Exercise 2.

Solution:-

A = [5 4 -2 6; 3 6 6 4.5; 6 12 -2 16; 4 -2 2 -4];

B = [4; 13.5; 20; 6];

X = (A^-1) \* B

Output:-

X = -0.6667

31.6667

-11.3333

-23.6667

# Exercise 3.

Solution:-

>> a = zeros(6);

>> a(3:4,:) = 1;

>> a(:,3:4) = 1;

Output:-

a =

0 0 1 1 0 0

0 0 1 1 0 0

1 1 1 1 1 1

1 1 1 1 1 1

0 0 1 1 0 0

0 0 1 1 0 0

# Exercise 4.

Solution:-

b = eye(7);

b(1:2,1:3) = 2;

b(1:3,5:7) = 5;

b(3,1:3) = 3;

b(5:7,1:2) = 4;

b(5:7,3) = 7;

b(5:7,5:7) = 9

Output:-

b =

2 2 2 0 5 5 5

2 2 2 0 5 5 5

3 3 3 0 5 5 5

0 0 0 1 0 0 0

4 4 7 0 9 9 9

4 4 7 0 9 9 9

4 4 7 0 9 9 9

# Exercise 5.

Solution:-

>> Afirst = linspace(4,49,16);

>> Asecond = Afirst([1:4 13:16])

Output:-

Asecond =

4 7 10 13 40 43 46 49

# Exercise 6.

Solution:-

>> n = [1 10 100 500 1000 2000 4000 8000];

>> y = (1+1./n).^n

Output:-

y =

Columns 1 through 6

2.0000 2.5937 2.7048 2.7156 2.7169 2.7176

Columns 7 through 8

2.7179 2.7181