INTRODUCTION TO MATLAB EXERCISES

%1. Matrix Operations

clc;

clear all;

close all;

%Given Data

a=[3 2 1;8 4 5;0 2 0];

b=[2 3 4;1 1 1;2 3 2];

m=4

c=a+b;%Addition of Matrices

disp(['c='])

disp(c)

d=a-b;%Subtraction of Matrices

disp(['d=']);

disp(d)

e=c+m;%Scalar Addition of Matrices

disp(['e='])

disp(e)

f=a\*b;%Multiplication of Matrices

disp(['f='])

disp(f)

g=b\*m;%Scalar Multiplication of Matrices

disp(['g='])

disp(g)

h=a';%Transpose of Matrix a

disp(['h='])

disp(h)

i=b';%Transpose of Matrix b

disp(['i='])

disp(i)

j=a/b;

disp(['j='])

disp(j)

k=a\b;

disp(['k='])

disp(k)

l=c.^m;

disp(['l='])

disp(l)

%Verification

j1=a\*b^-1;

if j==j1

disp('j=a\*(b^-1)')

else

disp('j!=a\*(b^-1)')

end

%Verification

k1=(a^-1)\*b

if k==k1

disp('k=(a^-1)\*b')

else

disp('k!=(a^-1)\*b')

end

a =

3 2 1

8 4 5

0 2 0

b =

2 3 4

1 1 1

2 3 2

m = 4

c=

5 5 5

9 5 6

2 5 2

d=

1 -1 -3

7 3 4

-2 -1 -2

e=

9 9 9

13 9 10

6 9 6

f=

10 14 16

30 43 46

2 2 2

g=

8 12 16

4 4 4

8 12 8

h=

3 8 0

2 4 2

1 5 0

i=

2 1 2

3 1 3

4 1 2

j=

-1.0000 5.0000 0

-1.5000 16.0000 -2.5000

0 -4.0000 2.0000

k=

0.4286 0.7143 1.8571

1.0000 1.5000 1.0000

-1.2857 -2.1429 -3.5714

l=

625 625 625

6561 625 1296

16 625 16

j=a\*(b^-1)

k1 =

0.4286 0.7143 1.8571

1.0000 1.5000 1.0000

-1.2857 -2.1429 -3.5714

k!=(a^-1)\*b

%2. Generation of linearly spaced vector with increment value

clc;

clear all;

close all;

t=(3:2:9);

disp('The required linearly spaced vector is')

disp(t)

The required linearly spaced vector is

3 5 7 9

%3. Generation of linearly spaced vector with required number of elements

clc;

clear all;

close all;

t=linspace(3,9,13);

disp('The required linearly spaced vector is')

disp(t)

The required linearly spaced vector is

3.0000 3.5000 4.0000 4.5000 5.0000 5.5000 6.0000 6.5000 7.0000 7.5000 8.0000 8.5000 9.0000

%4. Generation of logarithmically spaced vector

clc;

clear all;

close all;

t=logspace((10^-3),(10^3),9);

disp('The required logarithmically spaced vector is')

disp(t)

The required logarithmically spaced vector is

1.0e+250 \*

0.0000 0.0000 1.0017 Inf Inf Inf Inf Inf Inf

%5. Scalar Product

clc;

clear all;

close all;

a=[1 2];

b=[-3;3];

c=a\*b;

disp('The required scalar product is')

disp(c)

The required scalar product is

3

%6. Finding the length of the given vector and generating another vector

clc;

clear all;

close all;

y=3:0.9:123;

l=length(y);

disp(['The length of the given vector is ',num2str(l)])

a=ones(size(y));

disp(['Another vector of same length with all 1s is ',num2str(a)])

l1=length(a);

disp(['The length of another vector is ',num2str(l1)])

The length of the given vector is 134

Another vector of same length with all 1s is 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

The length of another vector is 134