EXPERIMENT - 1

%transpose of the matrix%

a

a =

9 8 7 6

6 7 8 9

a'

ans =

9 6

8 7

7 8

6 9

sum(a')'

ans =

30

30

diag(a)

ans =

9

7

%matlab help%

help plot

plot Linear plot.

plot(X,Y) plots vector Y versus vector X. If X or Y is a matrix,

then the vector is plotted versus the rows or columns of the matrix,

whichever line up. If X is a scalar and Y is a vector, disconnected

line objects are created and plotted as discrete points vertically at

X.

clear a1

clear a2

clear ans

x

x =

1.0e+03 *

0.0100 0.0316 0.1000 0.3162 1.0000

zer=zeros(5,5)

zer =

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

diary off

clear all

x=[0:pi/2:10]

x =

0 1.5708 3.1416 4.7124 6.2832 7.8540
9.4248

plot(x,sin(x))

plot(x,cos(x))

plot(x,sin(x))

diary off

EXERCISE EXPERIMENT 1

%1_arithmetic opearions%

(2^5)/((2^5)-1)

ans =

1.0323

(1-(1/2^5))^(-1)

ans =

1.0323

%same%

(3(((5^0.5)-1/((5^0.5)+1)^2)))-1

(3(((5^0.5)-1/((5^0.5)+1)^2)))-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for mismatched

delimiters.

}

3(((5^0.5)-1/((5^0.5)+1)^2))-1

3(((5^0.5)-1/((5^0.5)+1)^2))-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

(3(((5^0.5)-1/((5^0.5)+1)^2)))-1

(3(((5^0.5)-1/((5^0.5)+1)^2)))-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

3(((5^0.5)-1/((5^0.5)+1)^2))-1

3(((5^0.5)-1/((5^0.5)+1)^2))-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

3((5^0.5-1)/(5^0.5+1)^2)-1

3((5^0.5-1)/(5^0.5+1)^2)-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

5^0.5

ans =

2.2361

3((5^0.5-1)/(5^0.5+1)^2)-1

3((5^0.5-1)/(5^0.5+1)^2)-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

3((5^0.5-1)/((5^0.5+1)^2))-1

3((5^0.5-1)/((5^0.5+1)^2))-1

{Error: Invalid expression. When calling a function or indexing a variable, use parentheses. Otherwise, check for

mismatched delimiters.

}

Area=pi*((pi^0.3-1)^2)

Area =

0.5275

exp(3)

ans =

20.0855

log(ans)

ans =

3

log10(10^5)

ans =

5

exp(pi*(163^0.5))

ans =

2.6254e+17

3^x=17

3^x=17

{Error: Incorrect use of '=' operator. To assign a value to a variable, use '='. To compare values for equality, use '=='.

}

sin(pi/6)

ans =

0.5000

cos(pi)

ans =

-1

tan(pi/2)

ans =

1.6331e+16

(sin(pi/6))^2+(cos(pi/6))^2

ans =

1

y=(cosh(32*pi))^2-(sinh(32*pi))^2

y =

```
    0

(1+3i)/(1-3i)

ans =

 -0.8000 + 0.6000i

exp(i*(pi/4))

ans =

  0.7071 + 0.7071i

a=exp(pi/2*i)

a =

  0.0000 + 1.0000i

a=exp(pi/2i)

a =

  0.0000 - 1.0000i

diary off
diary off
a=exp((pi/2)*i)

a =

  0.0000 + 1.0000i

diary off

x=[0 1.5 3 4 5 7 9 10]

x =

       0    1.5000    3.0000    4.0000    5.0000    7.0000
9.0000   10.0000

y=0.5*x+(-2)

y =

  -2.0000   -1.2500   -0.5000         0    0.5000    1.5000
2.5000    3.0000

t=[1:10:10]

t =

     1

t=[1:10:1]

t =

     1

t=[1:1:10]

t =

     1     2     3     4     5     6     7     8     9    10

x=t*(sin(t))
```

{Error using *

Incorrect dimensions for matrix multiplication. Check that the number of columns in the first matrix matches the number

of rows in the second matrix. To perform elementwise multiplication, use '.*'.

}

x=t.*(sin(t))

x =

0.8415 1.8186 0.4234 -3.0272 -4.7946 -1.6765 4.5989 7.9149 3.7091 -5.4402

y=(t-1)/(t+1)

y =

0.7426

y=(t-1)./(t+1)

y =

0 0.3333 0.5000 0.6000 0.6667 0.7143 0.7500 0.7778 0.8000 0.8182

z=(sin(t^2))./t^2

{Error using ^

Incorrect dimensions for raising a matrix to a power. Check that the matrix is square and the power is a scalar. To

perform elementwise matrix powers, use '.^'.

}

z=sin(t^2)./t^2

{Error using ^

Incorrect dimensions for raising a matrix to a power. Check that the matrix is square and the power is a scalar. To

perform elementwise matrix powers, use '.^'.

}

z=sin(t^2)./t.^2

{Error using ^

Incorrect dimensions for raising a matrix to a power. Check that the matrix is square and the power is a scalar. To

perform elementwise matrix powers, use '.^'.

}

z=sin(t.^2)./t.^2

z =

0.8415 -0.1892 0.0458 -0.0180 -0.0053 -0.0275 -0.0195 0.0144 -0.0078 -0.0051

diary off

%z=(sin(t^2))./t^2%

%aboce evpression works on matrix but not on scalar%

theta=[0;pi/4;pi/2;3*(pi/4);pi;5*(pi/4)]

theta =

0

0.7854

1.5708

2.3562

3.1416

3.9270

x=2*cos(theta)

x =

2.0000

1.4142

0.0000

-1.4142

-2.0000

-1.4142

y=2*sin(theta)

y =

0

1.4142

2.0000

1.4142

0.0000

-1.4142

r=sqrt((x^2+y^2))

{Error using ^

Incorrect dimensions for raising a matrix to a power. Check that the matrix is square and the power is a scalar. To

perform elementwise matrix powers, use '.^'.

}

r=sqrt((x.^2+y.^2))

r =

2

2

2

2

2

2

diary off

EXPERIMENT – 2

%exp2 to excercise array and matrix operations in matlab%

%row vector%

a=[9 8 7 6]

a =

9 8 7 6

%column matrix%

b=[6;7;8;9]

b =

6
7
8
9

%Durer's Magic Square%

D=[16 3 2 13;5 10 11 8;9 6 7 12;4 15 14 1]

D =

16 3 2 13
5 10 11 8
9 6 7 12
4 15 14 1

c=linspace(0,9,10)

c =

0 1 2 3 4 5 6 7 8 9

diary off

d=[50:-5:10]

d =

50 45 40 35 30 25 20 15 10

e=logspace(1,3)

e =

1.0e+03 *

Columns 1 through 12

0.0100 0.0110 0.0121 0.0133 0.0146 0.0160 0.0176 0.0193 0.0212 0.0233 0.0256 0.0281

Columns 13 through 24

0.0309 0.0339 0.0373 0.0409 0.0450 0.0494 0.0543 0.0596 0.0655 0.0720 0.0791 0.0869

Columns 25 through 36

0.0954 0.1048 0.1151 0.1265 0.1389 0.1526 0.1677 0.1842 0.2024 0.2223 0.2442 0.2683

Columns 37 through 48

0.2947 0.3237 0.3556 0.3907 0.4292 0.4715 0.5179 0.5690 0.6251 0.6866 0.7543 0.8286

Columns 49 through 50

0.9103 1.0000

diary off

x=logspace(1,3,5)

x =

1.0e+03 *

0.0100 0.0316 0.1000 0.3162 1.0000

a=[a;b]

{Error using vertcat

Dimensions of arrays being concatenated are not consistent.

}

a=[a;6 7 8 9]

a =

9 8 7 6

6 7 8 9

b=[b [9;8;7;6]]

b =

6 9

7 8

8 7

9 6

z=eye(5,5)

z =

1 0 0 0 0

0 1 0 0 0

0 0 1 0 0

0 0 0 1 0

0 0 0 0 1

%Deleting elements from the matrix%

z(:,1)=[]

z =

0 0 0 0

1 0 0 0

0 1 0 0

0 0 1 0

0 0 0 1

%modifying elements in the matrix%

z(4,4)=90

z =

0 0 0 0

1 0 0 0

0 1 0 0

0 0 1 90

0 0 0 1

size(a)

```
ans =

    2    4

size(b)

ans =

    4    2

%multiplying two matrix%
Y=a*b

Y =

  220   230
  230   220

a

a =

    9    8    7    6
    6    7    8    9

c

c =

    0    1    2    3    4    5    6    7    8    9

a1=eye(2,4)

a1 =

    1    0    0    0
    0    1    0    0

%array multiplication%
a2=a.*a1

a2 =

    9    0    0    0
    0    7    0    0

diary off
%matrix addition%
a+a1

ans =

   10    8    7    6
    6    8    8    9

diary off
R=rand(3,3)

R =

    0.8147    0.9134    0.2785
    0.9058    0.6324    0.5469
    0.1270    0.0975    0.9575

R1=randn(3,3)

R1 =
```

```
    2.7694    0.7254   -0.2050
   -1.3499   -0.0631   -0.1241
    3.0349    0.7147    1.4897
```

diary off

EXERCISE EXPERIMENT 2

```
clear all
B=[1 2;3 4]

B =

    1    2
    3    4

A=B.*
 A=B.*
 
{Error: Invalid expression. Check for missing or extra characters.
}
A=B.*2

A =

    2    4
    6    8

C=[-5 5;5 3]

C =

   -5    5
    5    3

C=A+B

C =

    3    6
    9   12

D=B+A

D =

    3    6
    9   12

C=D

C =

    3    6
    9   12

%same%
C=[-5 5;5 3]

C =

   -5    5
    5    3

clear D
(A+B)+C

ans =

   -2   11
   14   15

A+(B+C)
```

```
ans =

   -2   11
   14   15

2*(A+B)

ans =

    6   12
   18   24

2*A+2*B

ans =

    6   12
   18   24

%SAME%
A*(B+C)

ans =

   24   42
   40   98

A*B+A*C

ans =

   24   42
   40   98

%SAME%
D=zeros(2,4)

D =

    0    0    0    0
    0    0    0    0

E=eye(3,3)

E =

    1    0    0
    0    1    0
    0    0    1

E=E*5

E =

    5    0    0
    0    5    0
    0    0    5

F=ones(2,2)

F =

    1    1
    1    1

F=F*3

F =
```

```
   3   3
   3   3
```

Z=[A zeroes(2,2) zeroes(2,2);zeroes(2,2) B zeroes(2,2);zeroes(2,2) zeroes(2,2) C]

{Undefined function or variable 'zeroes'.

}

Z=[A zeros(2,2) zeros(2,2);zeros(2,2) B zeros(2,2);zeros(2,2) zeros(2,2) C]

Z =

```
   2   4   0   0   0   0
   6   8   0   0   0   0
   0   0   1   2   0   0
   0   0   3   4   0   0
   0   0   0   0  -5   5
   0   0   0   0   5   3
```

Z(6,:)=[]

Z =

```
   2   4   0   0   0   0
   6   8   0   0   0   0
   0   0   1   2   0   0
   0   0   3   4   0   0
   0   0   0   0  -5   5
```

Z(:,6)=[]

Z =

```
   2   4   0   0   0
   6   8   0   0   0
   0   0   1   2   0
   0   0   3   4   0
   0   0   0   0  -5
```

Z(1:2,1:2)

ans =

```
   2   4
   6   8
```

Z(5,5)=4

Z =

```
   2   4   0   0   0
   6   8   0   0   0
   0   0   1   2   0
   0   0   3   4   0
   0   0   0   0   4
```

Z(13)

ans =

```
   1
```

Z(12,1)=1

Z =

```
   2   4   0   0   0
   6   8   0   0   0
```

0 0 1 2 0

0 0 3 4 0

0 0 0 0 4

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

0 0 0 0 0

1 0 0 0 0

diary off