다음 행렬을 만드시오

1. $res = \begin{vmatrix} 0.6 & 9.4 & 2.3 & -7.0 \\ -7.2 & 2.5 & -0.1 & -5.2 \\ 5.4 & 9.2 & 9.0 & 1.5 \\ 0.5 & 1.5 & 2.4 & 3.6 \\ 1.2 & -4.6 & 6.7 & 4.1 \end{vmatrix}$

2. 행렬 res로부터 아래 행렬을 만드시오.

$R1 = \begin{vmatrix} 0.6 \\ -7.2 \\ 5.4 \\ 0.5 \\ 1.2 \end{vmatrix}$ $R2 = \begin{vmatrix} 2.5 & -0.1 \\ 9.2 & 9.0 \end{vmatrix}$

$R3 = \begin{vmatrix} 5.4 & 9.2 & 9.0 & 1.5 \\ 0.5 & 1.5 & 2.4 & 3.6 \end{vmatrix}$

$R4 = \begin{vmatrix} 2.3 & -7.0 \\ -0.1 & -5.2 \\ 9.0 & 1.5 \\ 2.4 & 3.6 \\ 6.7 & 4.1 \end{vmatrix}$

3. -10에서 20까지 3씩 증가하는 행렬

4. 20에서 37까지 같은 간격으로 5개 원소를 갖는 행렬

5. 우리나라는 온도의 단위로 ℃를 사용하지만 미국 등에서는 ℉를 사용한다. 섭씨 온도 -10, -5, 0, 5, 10, 15, 20, 25, 30, 35, 40 ℃를 화씨 온도(℉)로 만들고 하나의 11×2 행렬을 만드시오.

$$℉ = \frac{9}{5} \times ℃ + 32$$

MATLAB

Chapter 4.
매트랩에서 행렬 다루기

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유규선

```
>> m=[1 2 3 4 5; 2 3 4 5 6; 3 4 5 6 7];
>> w=m(2:3,:)

>> k=m(:,2:3)

>>
```

```
w =

     2     3     4     5     6
     3     4     5     6     7

k =

     2     3
     3     4
     4     5
```

명령어

- zeros(m)
- zeros (m,n)
- ones (m)
- ones (m,n)
- diag (A) diag (A, k)
- fliplr
- flipud
- magic (m)
- meshgrid
- reshape

```
>> b=[2 4 6];
>> diag(b)

ans =
     2     0     0
     0     4     0
     0     0     6

>> diag(b,-2)

ans =
     0     0     0     0     0
     0     0     0     0     0
     2     0     0     0     0
     0     4     0     0     0
     0     0     6     0     0

>> diag(b,+2)

ans =
     0     0     2     0     0
     0     0     0     4     0
     0     0     0     0     6
     0     0     0     0     0
     0     0     0     0     0
```

```
>> c=-2:2

>> [m,n]=meshgrid(b,c)
```

```
c =

    -2    -1     0     1     2

m =
     2     4     6
     2     4     6
     2     4     6
     2     4     6
     2     4     6

n =
    -2    -2    -2
    -1    -1    -1
     0     0     0
     1     1     1
     2     2     2
```

```
>> A=[2 5 6 1; 3 -2 10 0];
>> B=reshape(A,4,2)

B =

     2     6
     3    10
     5     1
    -2     0

>> C=reshape(A,8,1)

C =

     2
     3
     5
    -2
     6
    10
     1
     0

>> flipud(B)

ans =

    -2     0
     5     1
     3    10
     2     6

>> fliplr(A)

ans =

     1     6     5     2
     0    10    -2     3

>>
```

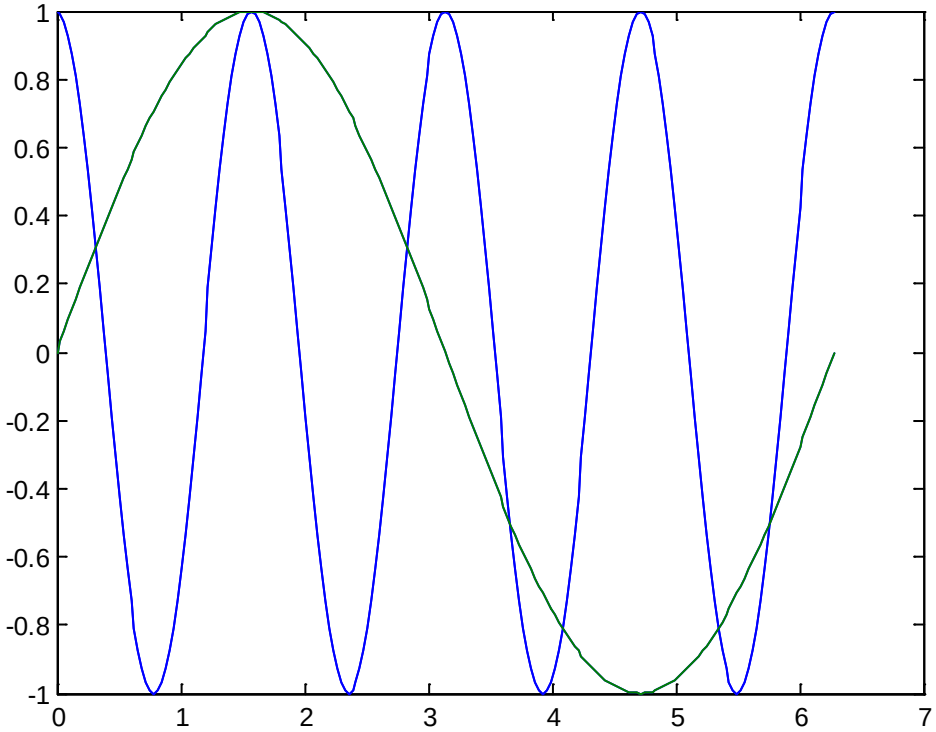
MATLAB

Chapter 5. 그래프 그리기

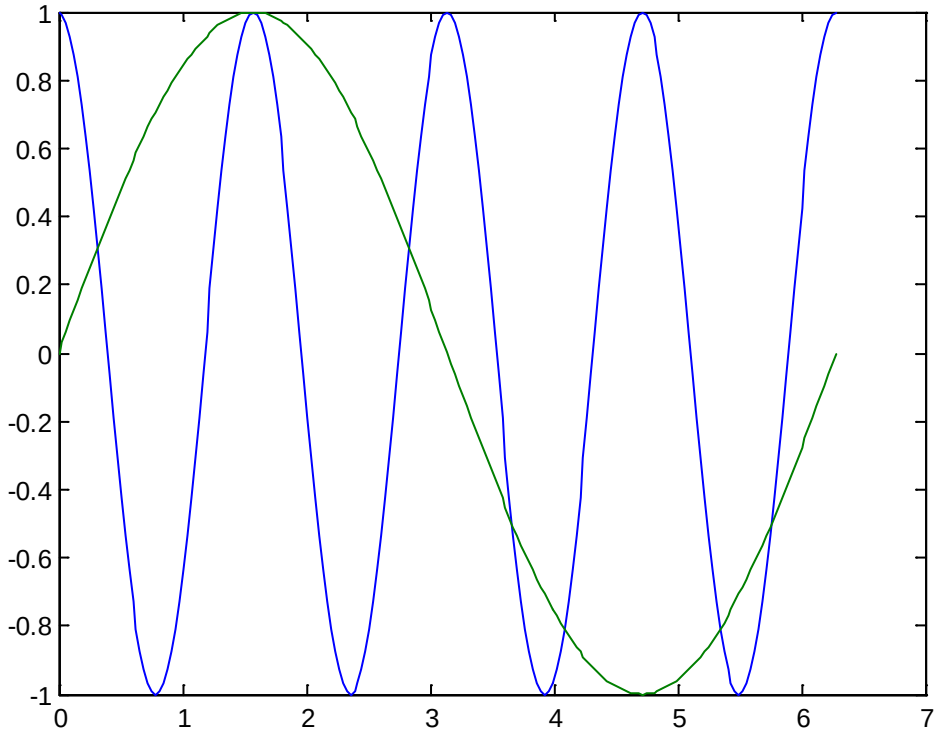
- plot(x,y)
- title(‘ ’)
- xlabel(‘ ’)
- ylabel(‘ ’)
- grid on
- grid off
- axis([xmin,xmax,ymin,ymax])
- legend(‘문자열1’, ‘문자열2’)

- text (x,y,’문자열’)
- ＼ 그리스문자 사용
- –, : , -, - -
- ., o, x, +, *
- b, g, r, c, m, y, k

```
>> x=0:pi/100:2*pi;
>> y1=cos(x*4);
>> plot(x,y1)
>> y2=sin(x);
>> hold on;
>> plot(x,y2)
```



```
>> hold off
>> plot(x,y1,x,y2)
>>
```



다중 그래프

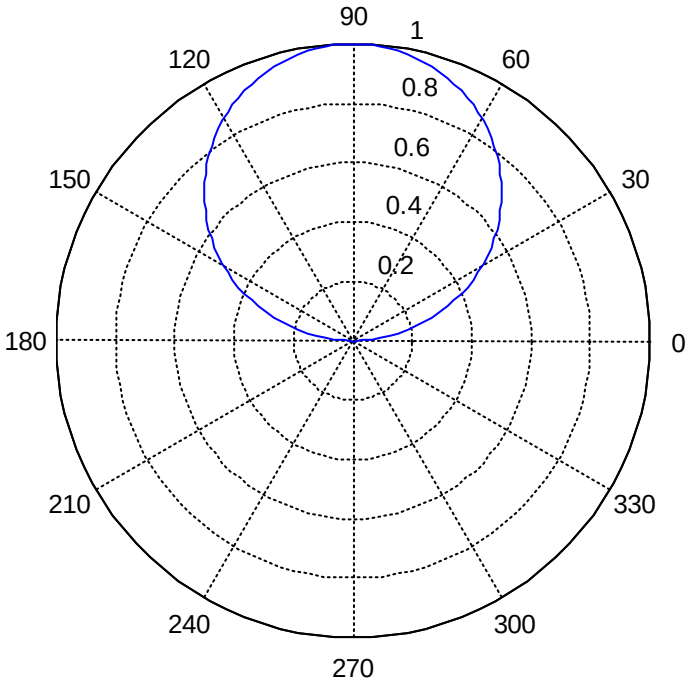
- subplot(m,n,p)
- polar(theta, r)
- semilogx(x,y)
- loglog(x,y)

- m*n 의 그림창에서 p 번째 그림창에 그리기

- bar(x)
- barh(x)
- bar3(x)
- bar3h(x)
- pie(x)
- pie3(x)
- hist(x)
- hist(x, n): n개 구간

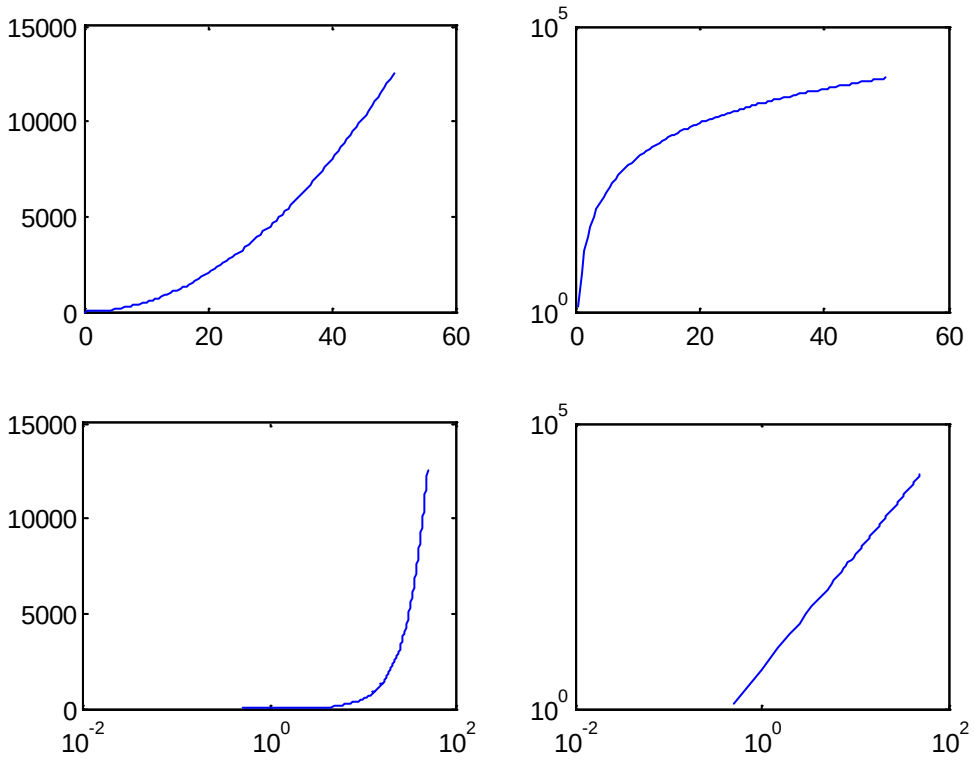
- plotyy
- fplot
- plot3(x,y,z)
- comet3(x,y,z)

```
>> x=0:pi/100:pi;

>> y=sin(x);

>> polar(x,y)

>>
```

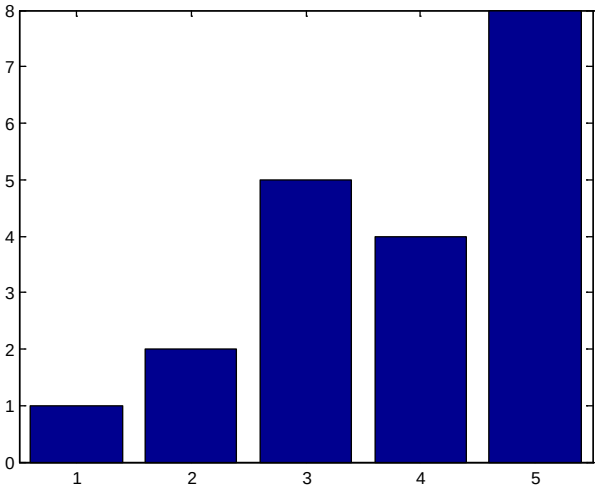


MATLAB

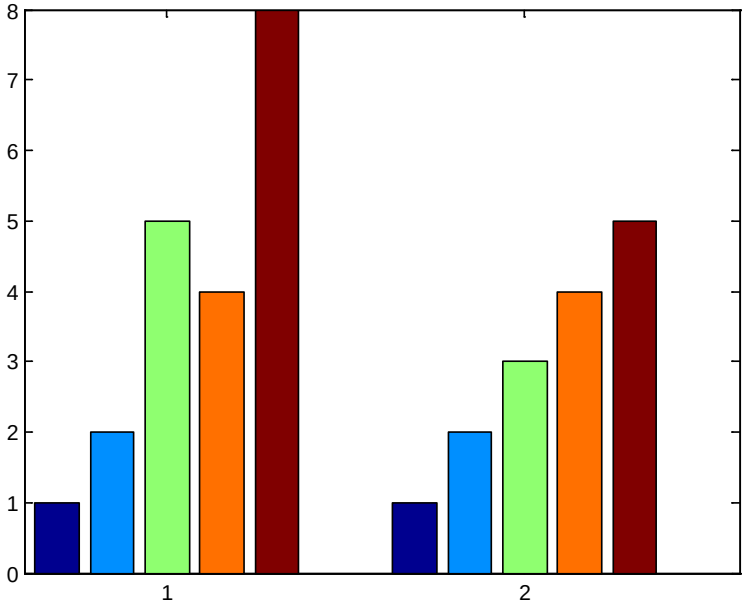
```
>> x=0:0.5:50;
>> y=5*x.^2;
>> subplot(2,2,1)
>> plot(x,y)
>> subplot(2,2,2)
>> semilogy(x,y)
>> subplot(2,2,3)
>> semilogx(x,y)
>> subplot(2,2,4)
>> loglog(x,y)
>>
```



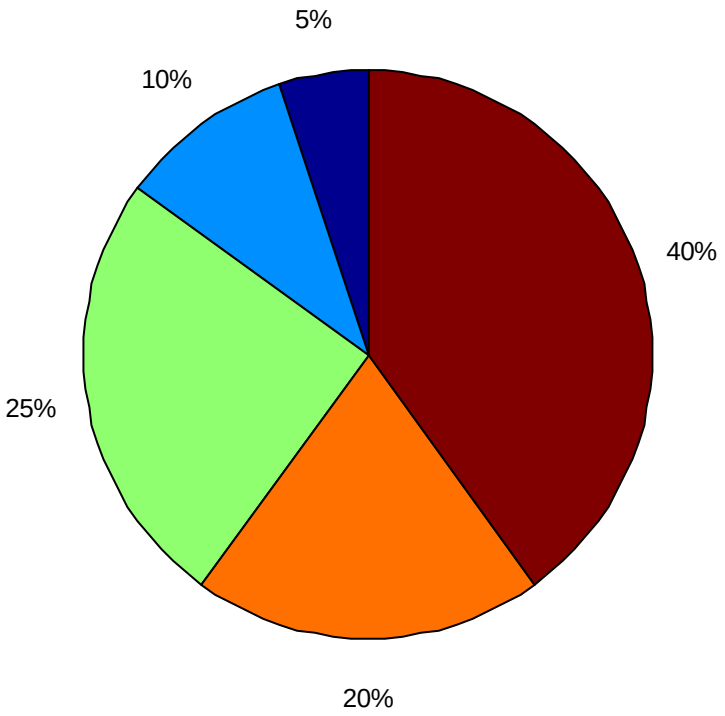
```
>> x=[1,2,5,4,8];
>> y=[x;1:5]

>> bar(x)
>> bar(y)
>>
```



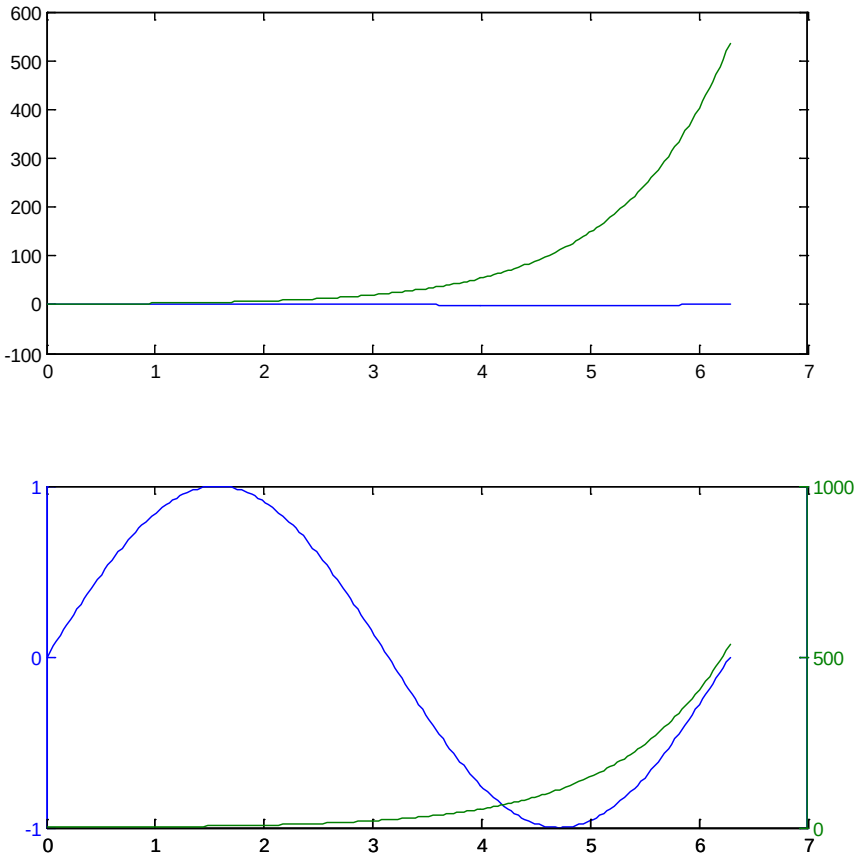

```
y =

     1     2     5     4     8
     1     2     3     4     5
```



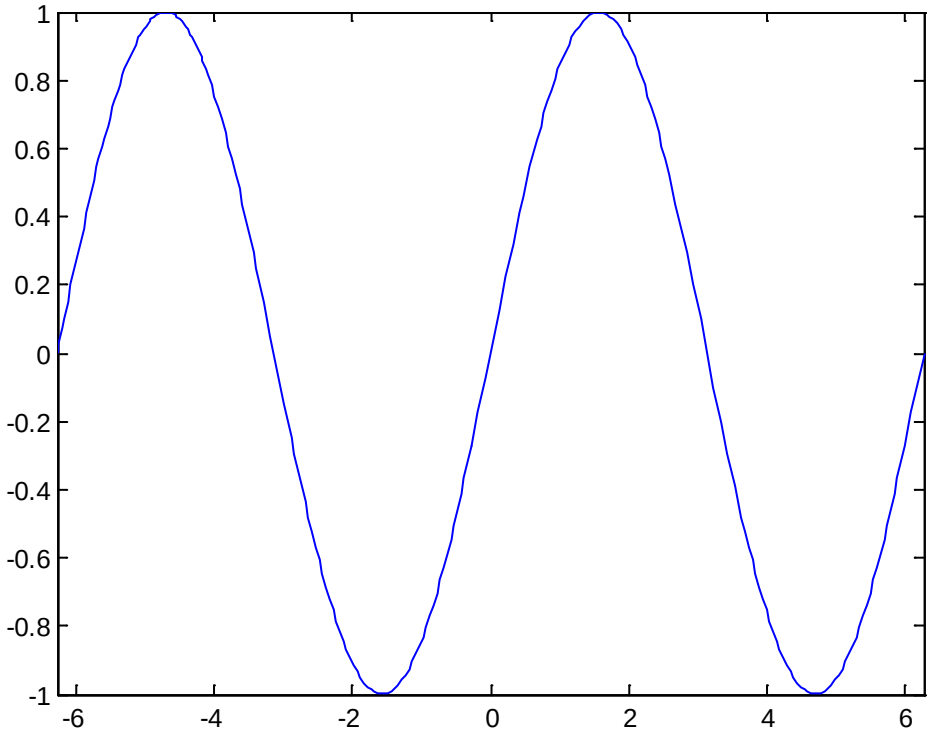
```
>> pie(x)
```



```
>> x=0:pi/100:2*pi;
>> y1=sin(x);
>> y2=exp(x);
>> subplot(2,1,1)
>> plot(x,y1,x,y2)
>> subplot(2,1,2)
>> plotyy(x,y1,x,y2)
>>
```



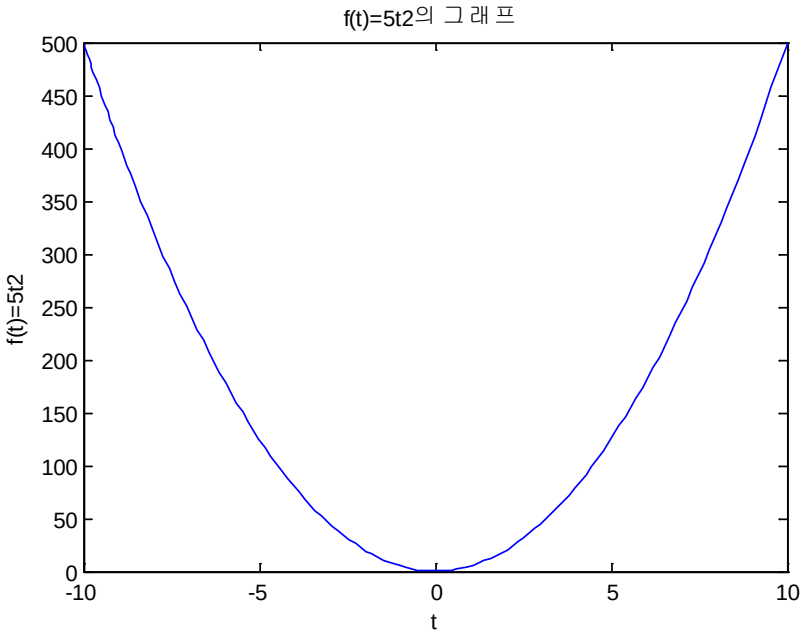
```
>> fplot('sin(x)',[-2*pi,2*pi])
```



Example. 다음 함수의 그래프를 그리시오.

축 이름과 그림 제목을 기입하시오.

1. $f(t)=5t^2$
2. $f(t)=5\sin^2(t)+t\cos^2(t)$
3. $f(t)=t\cdot e^t$
4. $f(t)=\ln(t)+\sin(t)$



>> fplot('5*t^2',[-10,10])

>> fplot('5*sin(t)^2+t*cos(t)^2',[-2*pi,2*pi])