MATLAB An Introduction with Applications 6th edition Gilat Solutions Manual

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Chapter 2
Solved Problems

Problem 1

```
>> v=[3 4*2.55 68/16 45 110^(1/3) cosd(25) 0.05]
v =
     3.0000    10.2000     4.2500    45.0000     4.7914
0.9063    0.0500
```

Problem 2

```
>> v=[54/(3+4.2^2), 32, 6.3^2-7.2^2, 54, exp(3.7),
sind(66)+cos(3*pi/8)]
v =
    2.6163   32.0000  -12.1500   54.0000   40.4473    1.2962
```

Problem 3

```
>> v=[25.5 14*tand(58)/(2.1^2+11) factorial(6) 2.7^4 0.0375
pi/5]
v =
   25.5000    1.4539  720.0000   53.1441    0.0375    0.6283
```

Problem 4

```
>> v=[32/3.2^2; sind(35)^2; 6.1; log(29^2); 0.00552;
log(29)^2; 133]
v =
    3.1250
```


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```
    0.3290
    6.1000
    6.7346
    0.0055
   11.3387
  133.0000
```

Problem 5

```
>> x=0.85; y=12.5;
>> v=[y; y^x; log(y/x); y*x; x+y]
v =
   12.5000
    8.5580
    2.6882
   10.6250
   13.3500
```

Problem 6

```
>> a=3.5; b=-6.4;
>> v=[a a^2 a/b a*b sqrt(a)]
v =
    3.5000   12.2500   -0.5469  -22.4000    1.8708
```

Problem 7

```
>> V=2:5:37
V =
     2     7    12    17    22    27    32    37
```

Problem 8

```
>> v=linspace(81,12,9)
v =
   81.0000   72.3750   63.7500   55.1250   46.5000   37.8750
29.2500   20.6250   12.0000
```

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Problem 9

```
>> v=[22.5:-2.5:0]'
v =
   22.5000
   20.0000
   17.5000
   15.0000
   12.5000
   10.0000
    7.5000
    5.0000
    2.5000
         0
```

Problem 10

```
>> v=linspace(-21,12,15)'
v =
  -21.0000
  -18.6429
  -16.2857
  -13.9286
  -11.5714
   -9.2143
   -6.8571
   -4.5000
   -2.1429
    0.2143
    2.5714
    4.9286
    7.2857
    9.6429
   12.0000
```

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Problem 11

```
>> same(1:7)=-3
same =
    -3    -3    -3    -3    -3    -3    -3
```

Problem 12

```
>> a(9)=7.5
a =
         0         0         0         0         0         0
0         0    7.5000
```

Problem 13

```
>> b=[1:10 9:-1:1]
b =
     1     2     3     4     5     6     7     8     9    10
9     8     7     6     5     4     3     2     1
```

Problem 14

```
>> vecA=49:-3:10
vecA =
    49    46    43    40    37    34    31    28    25    22
19    16    13    10
>> vecB=[vecA(1:4) vecA(11:14)]
vecB =
    49    46    43    40    19    16    13    10
```

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Problem 15

```
>> vecC=13:4:73
vecC =
    13    17    21    25    29    33    37    41    45    49
53    57    61    65    69    73
>> Codd=vecC(1:2:15)
Codd =
    13    21    29    37    45    53    61    69
>> Ceven=vecC(2:2:16)
Ceven =
    17    25    33    41    49    57    65    733
```

Problem 16

```
>> A=[0:5:30; 600:-100:0; linspace(0,5,7)]
A =
         0    5.0000   10.0000   15.0000   20.0000   25.0000   30.0000
  600.0000  500.0000  400.0000  300.0000  200.0000  100.0000         0
         0    0.8333    1.6667    2.5000    3.3333    4.1667    5.0000
```

```
>> A=[0:5:30; 600:-100:0; linspace(0,5,7)]
A =
       0   5.0000  10.0000  15.0000  20.0000  25.0000  30.0000
600.0000 500.0000 400.0000 300.0000 200.0000 100.0000        0
       0   0.8333   1.6667   2.5000   3.3333   4.1667   5.0000
```

Problem 17

```
>> b=[1:5;linspace(0,0,5);linspace(3,3,5)]'
b =
     1     0     3
     2     0     3
     3     0     3
     4     0     3
     5     0     3
```

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Problem 18

```
>> Aninee(1:4,1:6)=9
Aninee =
     9     9     9     9     9     9
     9     9     9     9     9     9
     9     9     9     9     9     9
     9     9     9     9     9     9
```

Problem 19

```
>> C(3,5)=8
C =
     0     0     0     0     0
     0     0     0     0     0
     0     0     0     0     8
```

Problem 20

```
>> D(2:3,4:5)=6
D =
     0     0     0     0     0
     0     0     0     6     6
     0     0     0     6     6
```

Problem 21

```
>> E(2:4,3:5)=[1:3;4:6;7:9]
E =
     0     0     0     0     0
     0     0     1     2     3
     0     0     4     5     6
     0     0     7     8     9
```

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Problem 22

```
>> F(2:4,3:5)=[1:3;10:-2:6;20:6:32]'
F =
   0    0    0    0    0
   0    0    1   10   20
   0    0    2    8   26
   0    0    3    6   32
```

Problem 23

Script file

```
a=[7 2 -3 1 0];
b=[-3 10 0 7 -2];
c=[1 0 4 -6 5];
ma=[a;b;c]
mb=[a' b' c']
clear
```

Command Window

```
ma =
     7     2    -3     1     0
    -3    10     0     7    -2
     1     0     4    -6     5
mb =
     7    -3     1
     2    10     0
    -3     0     4
     1     7    -6
     0    -2     5
```

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Problem 24

Script file

```
a=[7 2 -3 1 0];
b=[-3 10 0 7 -2];
c=[1 0 4 -6 5];
ma=[a(1:3);b(1:3);c(1:3)]
mb=[a(1:3)' b(1:3)' c(1:3)']
```

Command Window

```
ma =
     7     2    -3
    -3    10     0
     1     0     4
mb =
     7    -3     1
     2    10     0
    -3     0     4
```

Problem 25

Script file

```
a=[-4 10 0.5 1.8 -2.3 7];
b=[0.7 9 -5 3 -0.6 12];
ma=[a(2:5);b(3:6)]
mb=[a(2:4)' a(4:6)' b(1:3)',b(3:5)']
```

Command Window

```
ma =
   10.0000    0.5000    1.8000   -2.3000
   -5.0000    3.0000   -0.6000   12.0000
mb =
   10.0000    1.8000    0.7000   -5.0000
    0.5000   -2.3000    9.0000    3.0000
    1.8000    7.0000   -5.0000   -0.6000
```

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Problem 26

Script file

```
a=9:-3:0
b=[a a]
c=[a;a]
d=[a' a']
e=[[a;a;a;a] a']
```

Command Window

```
a =
     9     6     3     0
b =
     9     6     3     0     9     6     3     0
c =
     9     6     3     0
     9     6     3     0
d =
     9     9
     6     6
     3     3
     0     0
e =
     9     6     3     0     9
     9     6     3     0     6
     9     6     3     0     3
     9     6     3     0     0
```

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Problem 27

```
>> v=[15 0 6 -2 3 -5 4 9 1.8 -0.35 7]
v =
   15.0000         0    6.0000   -2.0000    3.0000   -
5.0000    4.0000    9.0000    1.8000   -0.3500    7.0000
>> a=v(2:5)
a =
     0     6    -2     3
>> b=v([1,3:7,11])
b =
    15     6    -2     3    -5     4     7
>> c=v([10,2,9,4])
c =
   -0.3500         0    1.8000   -2.0000
```

Problem 28

```
v =
   15.0000         0    6.0000   -2.0000    3.0000   -
5.0000    4.0000    9.0000    1.8000   -0.3500    7.0000
>> a=[v([2 7:10]);v([3,5:7,2])]
a =
         0    4.0000    9.0000    1.8000   -0.3500
    6.0000    3.0000   -5.0000    4.0000         0
>> b=[v([3:5,8])' v([10 6 4 1])' v(7:-1:4)']
b =
    6.0000   -0.3500    4.0000
   -2.0000   -5.0000   -5.0000
    3.0000   -2.0000    3.0000
    9.0000   15.0000   -2.0000r
```

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Problem 29

Script file

```
A=[1:6;7:12;13:18]
ha=A(1,:)
hb=A(:,6)'
hc=[A(2,1:3) A(3,4:6)]
```

Command Window

```
A =
     1     2     3     4     5     6
     7     8     9    10    11    12
    13    14    15    16    17    18
ha =
     1     2     3     4     5     6
hb =
     6    12    18
hc =
     7     8     9    16    17    18
```

Problem 30

Script file

```
B=[18:-1:13;12:-1:7;6:-1:1]
va=[B(:,2)' B(:,5)']
vb=[B(3,3:6) B(:,2)']'
vc=[B(:,2)' B(:,4)' B(:,6)']'
```

Command Window

```
B =
    18    17    16    15    14    13
    12    11    10     9     8     7
     6     5     4     3     2     1
va =
    17    11     5    14     8     2
vb =
     4
```

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```
     3
     2
     1
    17
    11
     5
vc =
    17
    11
     5
    15
     9
     3
    13
     7
     1
```

Problem 31

Script file

```
C=0.7:1.2:17.5
D=reshape(C,5,3)'
ua=[D(:,1)' D(:,3)' D(:,4)']'
ub=[D(2,:) D(:,3)']
uc=[D(1,1:3) D(3,3:5)]
```

Command Window

```
C =
    0.7000    1.9000    3.1000    4.3000    5.5000
6.7000   7.9000   9.1000  10.3000  11.5000  12.7000
13.9000  15.1000  16.3000  17.5000
D =
    0.7000    1.9000    3.1000    4.3000    5.5000
    6.7000    7.9000    9.1000   10.3000   11.5000
   12.7000   13.9000   15.1000   16.3000   17.5000
ua =
    0.7000
    6.7000
```

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```
   12.7000
    3.1000
    9.1000
   15.1000
    4.3000
   10.3000
   16.3000
ub =
     6.7000     7.9000     9.1000    10.3000    11.5000
3.1000    9.1000   15.1000
uc =
     0.7000     1.9000     3.1000    15.1000    16.3000
17.5000
```

Problem 32

Script file

```
a(5:7)=2;
E=[a;0.7:-0.1:0.1;2:2:14;22:-3:4]
F=E([2 4],3:7)
G=E(:,3:5)
```

Command Window

```
E =
          0          0          0          0     2.0000
2.0000    2.0000
     0.7000     0.6000     0.5000     0.4000     0.3000
0.2000    0.1000
     2.0000     4.0000     6.0000     8.0000    10.0000
12.0000   14.0000
    22.0000    19.0000    16.0000    13.0000    10.0000
7.0000    4.0000
F =
    0.5000    0.4000    0.3000    0.2000    0.1000
   16.0000   13.0000   10.0000    7.0000    4.0000
G =
         0         0    2.0000
    0.5000    0.4000    0.3000
    6.0000    8.0000   10.0000
   16.0000   13.0000   10.0000
```

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Problem 33

Script file

```
H=[1.7:-0.1:1.2;22:2:32;9:-1:4]
G=[H(1,[1 2 5 6]);H(3,2:5)]
K=[H(:,1)';H(:,4)';H(:,6)']
```

Command Window

```
H =
    1.7000    1.6000    1.5000    1.4000    1.3000
1.2000
   22.0000   24.0000   26.0000   28.0000   30.0000
32.0000
    9.0000    8.0000    7.0000    6.0000    5.0000
4.0000
G =
    1.7000   1.6000   1.3000   1.2000
    8.0000   7.0000   6.0000   5.0000
K =
    1.7000   22.0000    9.0000
    1.4000   28.0000    6.0000
    1.2000   32.0000    4.0000
```

Problem 34

```
>> M=[3:2:13;15:-1:10;1 2 3 1 2 3]
M =
     3     5     7     9    11    13
    15    14    13    12    11    10
     1     2     3     1     2     3
>> A=M([1,2],[2,4,5])
A =
     5     9    11
    14    12    11
>> B=M(:,[1:3,6])
B =
     3     5     7    13
    15    14    13    10
     1     2     3     3
```

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```
>> C=M([1,3],:)
C =
     3     5     7     9    11    13
     1     2     3     1     2     3
>> D=M([2,3],5)
D =
    11
     2
```

Problem 35

```
>> N=[33:-3:24;21:-3:12;9 6 6 10;14:4:26;30:4:42]'
N =
    33    21     9    14    30
    30    18     6    18    34
    27    15     6    22    38
    24    12    10    26    42
>> A=[N(1,1:4)',N(2,2:5)']
A =
    33    18
    21     6
     9    18
    14    34
>> B=[N(:,3)' N(3,:)]
B =
     9     6     6    10    27    15     6    22    38
>> C(3:4,5:6)=N(2:3,4:5)
C =
     0     0     0     0     0     0
     0     0     0     0     0     0
     0     0     0     0    18    34
     0     0     0     0    22    38
```

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Problem 36

```
>> v=1:3:34
v =
     1     4     7    10    13    16    19    22    25
28    31    34
>> M=reshape(v,3,4)
M =
     1    10    19    28
     4    13    22    31
     7    16    25    34
>> M(2,:)=[]
M =
     1    10    19    28
     7    16    25    34
>> M(:,3)=[]
M =
     1    10    28
     7    16    34
>> N=ones(size(M))
N =
     1     1     1
     1     1     1
```

Problem 37

```
>> A=[ones(2);zeros(2)]
A =
     1     1
     1     1
     0     0
     0     0
>> B=[eye(3) ones(3)]
B =
     1     0     0     1     1     1
     0     1     0     1     1     1
     0     0     1     1     1     1
>> C=[ones(2,4);zeros(1,4);ones(1,4)]
C =
     1     1     1     1
```

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```
     1     1     1     1
     0     0     0     0
     1     1     1     1
```

Problem 38

```
>> A=[eye(2) zeros(2,1) ones(2)]
A =
     1     0     0     1     1
     0     1     0     1     1
>> B=[zeros(2) ones(2); zeros(1,4); ones(1,4)]
B =
     0     0     1     1
     0     0     1     1
     0     0     0     0
     1     1     1     1
>> C=[ones(4,2),zeros(4,2),[ones(1) zeros(1,3)]']
C =
     1     1     0     0     1
     1     1     0     0     0
     1     1     0     0     0
     1     1     0     0     0
```

Problem 39

```
>> A=eye(6)
A =
     1     0     0     0     0     0
     0     1     0     0     0     0
     0     0     1     0     0     0
     0     0     0     1     0     0
     0     0     0     0     1     0
     0     0     0     0     0     1
>> A(1:3,4:6)=eye(3)
A =
     1     0     0     1     0     0
     0     1     0     0     1     0
     0     0     1     0     0     1
     0     0     0     1     0     0
```

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```
     0     0     0     0     1     0
     0     0     0     0     0     1
>> A(4:6,1:3)=eye(3)
A =
     1     0     0     1     0     0
     0     1     0     0     1     0
     0     0     1     0     0     1
     1     0     0     1     0     0
     0     1     0     0     1     0
     0     0     1     0     0     1
```

Problem 40

```
>> A=ones(2)
A =
     1     1
     1     1
>> A(3:4,3:4)=A
A =
     1     1     0     0
     1     1     0     0
     0     0     1     1
     0     0     1     1
>> A=[A A]
A =
     1     1     0     0     1     1     0     0
     1     1     0     0     1     1     0     0
     0     0     1     1     0     0     1     1
     0     0     1     1     0     0     1     1
```

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