

Chapter 2

Solved Problems

Problem 1

Script file:

```
clear, clc
row=[8 10/4 12*1.4 51 tand(85) sqrt(26) 0.15]
```

Command Window:

```
row =
    8.0000    2.5000   16.8000   51.0000   11.4301    5.0990    0.1500
```

Problem 2

Script file:

```
clear, clc
row=[sqrt(15)*10^3, 25/(14-6^2), log(35)/0.4^3, sind(65)/cosd(80), ...
    129, cos(pi/20)^2]
```

Command Window:

```
row =
    1.0e+03 *
    3.8730   -0.0011    0.0556    0.0052    0.1290    0.0010
```

Problem 3

Script file:

```
clear, clc
col=[25.5; 14*tand(58)/(2.1^2+11); factorial(6); 2.7^4; 0.0375; pi/5]
```

Command Window:

```
col =
    25.5000
     1.4539
   720.0000
    53.1441
     0.0375
     0.6283
```

Problem 4

Script file:

```
clear, clc
col=[32/3.2^2; sind(35)^2; 6.1; log(29^2); 0.00552; log(29)^2; 133]
```

Command Window:

```
col =
    3.1250
    0.3290
    6.1000
    6.7346
    0.0055
   11.3387
   133.0000
```

Problem 5

Script file:

```
clear, clc
x=0.85; y=12.5;
col=[y; y^x; log(y/x); x*y; x+y]
```

Command Window:

```
col =
   12.5000
    8.5580
    2.6882
   10.6250
   13.3500
```

Problem 6

Script file:

```
clear, clc
a=3.5; b=-6.4;
row=[a a^2 a/b a*b sqrt(a)]
```

Command Window:

```
row =
    3.5000    12.2500   -0.5469  -22.4000    1.8708
```

Problem 7

Script file:

```
clear, clc  
row=1:6:43
```

Command Window:

```
row =  
     1     7    13    19    25    31    37    43
```

Problem 8

Script file:

```
clear, clc  
%alternative row = 96:-9.4:2  
row=linspace(96,2,11)
```

Command Window:

```
row =  
    96.0000    86.6000    77.2000    67.8000    58.4000    49.0000    39.6000  
    30.2000    20.8000    11.4000     2.0000
```

Problem 9

Script file:

```
clear, clc  
%square brackets needed, else ' only applied to -10  
col = [26:-3.6:-10]'
```

Command Window:

```
col =  
    26.0000  
    22.4000  
    18.8000  
    15.2000  
    11.6000  
     8.0000  
     4.4000  
     0.8000  
    -2.8000  
    -6.4000  
   -10.0000
```

Problem 10

Script file:

```
clear, clc
%alternative col = [-34:27/8:-7]'
%for alternative square brackets needed, else ' only applied to -7
col=linspace(-34,-7,9)'
```

Command Window:

```
col =
    -34.0000
    -30.6250
    -27.2500
    -23.8750
    -20.5000
    -17.1250
    -13.7500
    -10.3750
     -7.0000
```

Problem 11

Script file:

```
clear, clc
Fives(1:5)=5
```

Command Window:

```
Fives =
      5      5      5      5      5
```

Problem 12

Script file:

```
clear, clc
Nines=linspace(9,9,9)
```

Command Window:

```
Nines =
      9      9      9      9      9      9      9      9      9
```

Problem 13

Script file:

```
clear, clc
a=[zeros(1,5) 4.7]
```

Command Window:

```
a =
      0      0      0      0      0  4.7000
```

Problem 14

Script file:

```
clear, clc
%alternate b=[linspace(0,0,5) linspace(3.8,3.8,3)]
b=[zeros(1,5) 3.8*ones(1,3)]
```

Command Window:

```
b =
Columns 1 through 7
      0      0      0      0      0  3.8000  3.8000
Column 8
  3.8000
```

Problem 15

Script file:

```
clear, clc
b=[0:2:12 9:-3:0]
```

Command Window:

```
b =
      0      2      4      6      8     10     12      9      6      3      0
```

Problem 16

Script file:

```
clear, clc
a=2:3:17; b=3:4:15;
c=[a,b]
```

Command Window:

```
c =
     2     5     8    11    14    17     3     7    11    15
```

Problem 17

Script file:

```
clear, clc
a=[2:3:17]'; b=[3:4:15]';
c=[a;b]
```

Command Window:

```
c =
     2
     5
     8
    11
    14
    17
     3
     7
    11
    15
```

Problem 18

Script file:

```
clear, clc
vtA=8:7:71;
%alternatives vtB=vtA([1:4 8:10]),vtB=vtA([1:4 end-2:end]),
% vtB=[vtA(1:4) vtA(end-2:end)]
vtB=[vtA(1:4) vtA(8:10)]
```

Command Window:

```
vtB =
     8    15    22    29    57    64    71
```

Problem 19

Script file:

```
clear, clc
vctC=5:4:49;
disp('Part (a)')
Codd=vctC(1:2:11)
disp('Part (b)')
Ceven=vctC(2:2:12)
```

Command Window:

```
Part (a)
Codd =
     5     13     21     29     37     45
Part (b)
Ceven =
     9     17     25     33     41     49
```

Problem 20

Script file:

```
clear, clc
vctD=0:3:27;
%alternatives vctDop(10:-1:1)=vctD, vctDop(end:-1:1)=vctD'
% vctDop=vctD(10:-1:1)
vctDop=vctD(end:-1:1)
```

Command Window:

```
vctDop =
    27    24    21    18    15    12     9     6     3     0
```

Problem 21

Script file:

```
clear, clc
A=[130:-20:10; linspace(1,12,7); 12:10:72]
```

Command Window:

```
A =
    130.0000    110.0000    90.0000    70.0000    50.0000    30.0000    10.0000
     1.0000     2.8333     4.6667     6.5000     8.3333    10.1667    12.0000
    12.0000    22.0000    32.0000    42.0000    52.0000    62.0000    72.0000
```

Problem 22

Script file:

```
clear, clc
B=[linspace(5,5,5);linspace(2,2,5);linspace(3,3,5);]'
```

Command Window:

```
B =
     5     2     3
     5     2     3
     5     2     3
     5     2     3
     5     2     3
```

Problem 23

Script file:

```
clear, clc
%alternative C = [linspace(7,7,5); linspace(7,7,5)]
C=7*ones(2,5)
```

Command Window:

```
C =
     7     7     7     7     7
     7     7     7     7     7
```

Problem 24

Script file:

```
clear, clc
D=[zeros(3,4) [8:-1:6]']
```

Command Window:

```
D =
     0     0     0     0     8
     0     0     0     0     7
     0     0     0     0     6
```


Problem 25

Script file:

```
E=[zeros(2,5); zeros(2) [5:-1:3; 2:-1:0]]
```

Command Window:

```
E =  
    0    0    0    0    0  
    0    0    0    0    0  
    0    0    5    4    3  
    0    0    2    1    0
```

Problem 26

Script file:

```
clear, clc  
F=[linspace(0,0,5); zeros(3,2) [1:3;10:-2:6;20:6:32]]'
```

Command Window:

```
F =  
    0    0    0    0    0  
    0    0    1   10   20  
    0    0    2    8   26  
    0    0    3    6   32
```

Problem 27

Script file:

```
clear, clc  
a=[3 -1 5 11 -4 2]; b=[7 -9 2 13 1 -2]; c=[-2 4 -7 8 0 9];  
disp('Part (a)')  
matrixA=[a;b;c]  
disp('Part (b)')  
%alternative matrixB=[b' c' a']  
matrixB=[b;c;a]'
```

Command Window:

```
Part (a)  
matrixA =  
     3     -1      5     11     -4      2  
     7     -9      2     13      1     -2  
    -2      4     -7      8      0      9
```

```
Part (b)
matrixB =
     7     -2      3
    -9      4     -1
     2     -7      5
    13      8     11
     1      0     -4
    -2      9      2
```

Problem 28

Script file:

```
a=[3 -1 5 11 -4 2]; b=[7 -9 2 13 1 -2]; c=[-2 4 -7 8 0 9];
disp('Part (a)')
matrixA=[a(3:6); b(3:6); c(3:6)]
disp('Part (b)')
%alternate matrixB = [a(1:3); b(1:3); c(1:3)]'
matrixB=[a(1:3)' b(1:3)' c(1:3)']
```

Command Window:

```
Part (a)
matrixA =
     5     11     -4      2
     2     13      1     -2
    -7      8      0      9

Part (b)
matrixB =
     3      7     -2
    -1     -9      4
     5      2     -7
```

Problem 29

Script file:

```
clear, clc
a=[3 9 -0.5 3.6 1.5 -0.8 4]; b=[12 -0.8 6 2 5 3 7.4];
disp('Part (a)')
matrixA=[a(3:6);a(4:7);b(2:5)]
disp('Part (b)')
%alternate matrixB = [a(2:7); b(1:3) b(5:7)]'
matrixB=[a(2:7)' b([1:3 5:7])']
```

Command Window:

```
Part (a)
matrixA =
    -0.5000    3.6000    1.5000   -0.8000
     3.6000    1.5000   -0.8000    4.0000
    -0.8000    6.0000    2.0000    5.0000
Part (b)
matrixB =
     9.0000    12.0000
    -0.5000   -0.8000
     3.6000     6.0000
     1.5000     5.0000
    -0.8000     3.0000
     4.0000     7.4000
```

Problem 30

Script file:

```
clear, clc
disp('Part (a)')
a=1:4:17
disp('Part (b)')
b=[a(1:3) a]
disp('Part (c)')
c=[a;a]'
disp('Part (d)')
d=[a' a']
disp('Part (e)')
e=[[a; a; a; a; a] a']
```

Command Window:

```
Part (a)
a =
     1     5     9    13    17
Part (b)
b =
     1     5     9     1     5     9    13    17
Part (c)
c =
     1     1
     5     5
     9     9
    13    13
    17    17
```

Part (d)

d =

1	1
5	5
9	9
13	13
17	17

Part (e)

e =

1	5	9	13	17	1
1	5	9	13	17	5
1	5	9	13	17	9
1	5	9	13	17	13
1	5	9	13	17	17

Problem 31

Script file:

```
clear, clc
v=[6 11 -4 5 8 1 -0.2 -7 19 5];
disp('Part (a)')
a=v(3:8)
disp('Part (b)')
b=v([1,3,2:7,4,6])
disp('Part (c)')
c=v([9,1,5,4])'
```

Command Window:

Part (a)

a =

-4.0000	5.0000	8.0000	1.0000	-0.2000	-7.0000
---------	--------	--------	--------	---------	---------

Part (b)

b =

6.0000	-4.0000	11.0000	-4.0000	5.0000	8.0000	1.0000	-
0.2000	5.0000	1.0000					

Part (c)

c =

19
6
8
5

Problem 32

Script file:

```
clear, clc
v=[6 11 -4 5 8 1 -0.2 -7 19 5];
disp('Part (a)')
a=[v([1:3 7:-1:5]); v([10,1,4:6,2])]
disp('Part (b)')
b=[v([9,2:4,1])' v([5 3 10 2 7])' v([10:-2:4,10])']
```

Command Window:

```
Part (a)
a =
    6.0000    11.0000   -4.0000   -0.2000    1.0000    8.0000
    5.0000    6.0000    5.0000    8.0000    1.0000   11.0000

Part (b)
b =
   19.0000    8.0000    5.0000
   11.0000   -4.0000   -7.0000
   -4.0000    5.0000    1.0000
    5.0000   11.0000    5.0000
    6.0000   -0.2000    5.0000
```

Problem 33

Script file:

```
clear, clc
A=[36:-2:26; 24:-2:14; 12:-2:2];
disp('Part (a)')
ha=A(2,:)
disp('Part (b)')
hb=A(:,6)
disp('Part (c)')
hc=[A(3,[1 2]) A(1,4:6)]
```

Command Window:

```
Part (a)
ha =
    24    22    20    18    16    14

Part (b)
hb =
    26
    14
     2

Part (c)
hc =
    12    10    30    28    26
```

Problem 34

Script file:

```
clear, clc
A=1:18;
B=reshape(A,3,6)
disp('Part (a)')
Ba=[B(:,1);B(:,3);B(:,5)]
disp('Part (b)')
Bb=[B(2,2:5) B(:,3)']
disp('Part (c)')
Bc=[B(1,3:5) B(3,2:4)]
```

Command Window:

```
B =
     1     4     7    10    13    16
     2     5     8    11    14    17
     3     6     9    12    15    18
Part (a)
Ba =
     1
     2
     3
     7
     8
     9
    13
    14
    15
Part (b)
Bb =
     5     8    11    14     7     8     9
Part (c)
Bc =
     7    10    13     6     9    12
```

Problem 35

Script file:

```
clear, clc
C=[1.5:.5:5 9.6:-.5:6.1];
D=reshape(C,4,4)'
disp('Part (a)')
%alternate Da=[D(1,:)'; D(3,:)]'
Da = [D(1,:) D(3,:)]'
disp('Part (b)')
%alternate Db = [D(:,2); D(:,4)]'
Db=[D(:,2)' D(:,4)']
disp('Part (c)')
Dc=[D(1,1:2) D(2:4,2)' D(4,1:3)]
```

Command Window:

```
D =
    1.5000    2.0000    2.5000    3.0000
    3.5000    4.0000    4.5000    5.0000
    9.6000    9.1000    8.6000    8.1000
    7.6000    7.1000    6.6000    6.1000
Part (a)
Da =
    1.5000
    2.0000
    2.5000
    3.0000
    9.6000
    9.1000
    8.6000
    8.1000
Part (b)
Db =
    2.0000    4.0000    9.1000    7.1000    3.0000    5.0000    8.1000
    6.1000
Part (c)
Dc =
    1.5000    2.0000    4.0000    9.1000    7.1000    7.6000    7.1000
    6.6000
```

Problem 36

Script file:

```
clear, clc
E=[0 5*ones(1,5);0.1:0.2:0.7 0.7 0.9;12:-3:-3;6:11]
disp('Part (a)')
F=E(2:3,3:5)
disp('Part (b)')
G=E(:,3:6)
```

Command Window:

```
E =
     0     5.0000     5.0000     5.0000     5.0000     5.0000
    0.1000    0.3000    0.5000    0.7000    0.7000    0.9000
   12.0000    9.0000    6.0000    3.0000         0   -3.0000
    6.0000    7.0000    8.0000    9.0000   10.0000   11.0000

Part (a)
F =
    0.5000    0.7000    0.7000
    6.0000    3.0000         0

Part (b)
G =
    5.0000    5.0000    5.0000    5.0000
    0.5000    0.7000    0.7000    0.9000
    6.0000    3.0000         0   -3.0000
    8.0000    9.0000   10.0000   11.0000
```

Problem 37

Script file:

```
clear, clc
H=[1.25:.25:2.75; 1:3 1:4; 45:-5:15];
disp('Part (a)')
G=[H(1,[1:3 6 7]); H(3,3:7)]
disp('Part (b)')
K=H(:,[2 3 5 7])'
```

Command Window:

```
Part (a)
G =
    1.2500    1.5000    1.7500    2.5000    2.7500
   35.0000   30.0000   25.0000   20.0000   15.0000
```


Part (b)

K =

1.5000	2.0000	40.0000
1.7500	3.0000	35.0000
2.2500	2.0000	25.0000
2.7500	4.0000	15.0000
8	-1500.0	
9	2121.3	

Problem 38

Script file:

```
clear, clc
M=reshape(1:18,3,6);
disp('Part (a)')
A=M([1,3],[1,5,6])
disp('Part (b)')
B=M(:,[4,4:6])
disp('Part (c)')
C=M([1,2],:)
disp('Part (d)')
D=M([2,3],[2,3])
```

Command Window:

Part (a)

A =

1	13	16
3	15	18

Part (b)

B =

10	10	13	16
11	11	14	17
12	12	15	18

Part (c)

C =

1	4	7	10	13	16
2	5	8	11	14	17

Part (d)

D =

5	8
6	9

Problem 39

Script file:

```
clear, clc
N=reshape([2:2:20 23:3:50],4,5);
disp('Part (a)')
A=[N(1,1:4)',N(2,2:5)']
disp('Part (b)')
B=[N(:,3)' N(3,:)']
disp('Part (c)')
C(3:4,5:6)=N(2:3,4:5)
```

Command Window:

```
Part (a)
A =
     2     12
    10     20
    18     32
    29     44

Part (b)
B =
    18    20    23    26     6    14    23    35    47

Part (c)
C =
     1     4     7    10    13    16
     2     5     8    11    14    17
     0     0     0     0    32    44
     0     0     0     0    35    47
```

Problem 40

Script file:

```
v=1:2:23
M=reshape(v,3,4)
M(2,:)=[]
M(:,3)=[]
N=ones(size(M))
```

Command Window:

```
v =  
    1     3     5     7     9    11    13    15    17    19    21    23  
M =  
    1     7    13    19  
    3     9    15    21  
    5    11    17    23  
M =  
    1     7    13    19  
    5    11    17    23  
M =  
    1     7    19  
    5    11    23  
N =  
    1     1     1  
    1     1     1
```

Problem 41

Script file:

```
clear, clc  
disp('Part (a)')  
matrixA=[ones(2) zeros(2)]  
disp('Part (b)')  
matrixB=[eye(2) zeros(2) ones(2)]  
disp('Part (c)')  
matrixC=[ones(1,4);zeros(2,4)]
```

Command Window:

```
Part (a)  
matrixA =  
    1     1     0     0  
    1     1     0     0  
Part (b)  
matrixB =  
    1     0     0     0     1     1  
    0     1     0     0     1     1  
Part (c)  
matrixC =  
    1     1     1     1  
    0     0     0     0  
    0     0     0     0
```

Problem 42

Script file:

```
clear, clc
disp('Part (a)')
matrixA=[eye(2) ones(2) zeros(2,1)]
disp('Part (b)')
matrixB=[ones(2,4);eye(2) zeros(2)]
disp('Part (c)')
matrixC=[zeros(2,1) ones(2,3) zeros(2,1); zeros(2,4) ones(2,1)]
```

Command Window:

```
Part (a)
matrixA =
     1     0     1     1     0
     0     1     1     1     0

Part (b)
matrixB =
     1     1     1     1
     1     1     1     1
     1     0     0     0
     0     1     0     0

Part (c)
matrixC =
     0     1     1     1     0
     0     1     1     1     0
     0     0     0     0     1
     0     0     0     0     1
```

Problem 43

Script file:

```
A=eye(2); B=ones(2); C=zeros(2);
D=[A B C;C B A]
```

Command Window:

```
D =
     1     0     1     1     0     0
     0     1     1     1     0     0
     0     0     1     1     1     0
     0     0     1     1     0     1
```

Problem 44

Script file:

```
clear, clc
A=ones(2,3);
A=A';
A(4:6,[3 4])=A
```

Command Window:

```
A =
     1     1     0     0
     1     1     0     0
     1     1     0     0
     0     0     1     1
     0     0     1     1
     0     0     1     1
```