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
```