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```
% Aditya Gopalan
% APPM 2360 Matlab Homework 5
% Due: Thursday, October 10, 2019

clc
clear all
close all
```

Problem #1

```
disp('Problem 1')
C1 = 7 * ones(2, 5)
```

```
Problem 1

C1 =

     7     7     7     7     7
     7     7     7     7     7
```

Problem #2

```
disp('Problem 2')

% (a)
a = [3 -1 5 11 -4 2];
b = [7 -9 2 13 1 -2];
c = [-2 4 -7 8 0 9];

% (b)
a2 = [a; b; c]
b2 = [a' b' c']

% (c)
a2-b2'
```

```
Problem 2

a2 =
```

```
     3    -1     5    11    -4     2
     7    -9     2    13     1    -2
    -2     4    -7     8     0     9


b2 =

     3     7    -2
    -1    -9     4
     5     2    -7
    11    13     8
    -4     1     0
     2    -2     9


ans =

     0     0     0     0     0     0
     0     0     0     0     0     0
     0     0     0     0     0     0
```

Problem #3

```
disp('Problem 3')

% (a)
A3 = [1 -3 5; 2 -2 4; -2 0 6];
B3 = [0 -2 1; 5 1 -6; 2 -7 1];
C3 = [-3 4 -1; 0 8 2; 3 5 3];
D3 = A3 + B3
E3 = B3 + A3

% (b)
A4 = [1 -3 5; 2 -2 4; -2 0 6];
B4 = [0 -2 1; 5 1 -6; 2 -7 1];
C4 = [-3 4 -1; 0 8 2; 3 5 3];
D4 = A4 + (B4 + C4)
E4 = (A4 + B4) + C4

% (c)
A5 = [1 -3 5;2 -2 4;-2 0 6];
B5 = [0 -2 1;5 1 -6;2 -7 1];
C5 = [-3 4 -1;0 8 2;3 5 3];
D5 = 3 * (A5 + C5)
E5 = 3 * A5 + 3 * C5

% (d)
A6 = [1 -3 5; 2 -2 4; -2 0 6];
B6 = [0 -2 1; 5 1 -6; 2 -7 1];
C6 = [-3 4 -1; 0 8 2; 3 5 3];
D6 = A6 * (B6 + C6)
E6 = A6 * B6 + A6 * C6
```

```
% (e)
A7 = [1 -3 5;2 -2 4;-2 0 6];
B7 = [0 -2 1;5 1 -6;2 -7 1];
C7 = [-3 4 -1;0 8 2;3 5 3];
D7 = A7 * B7
E7 = B7 * A7
```

Problem 3

D3 =

```
     1    -5     6
     7    -1    -2
     0    -7     7
```

E3 =

```
     1    -5     6
     7    -1    -2
     0    -7     7
```

D4 =

```
    -2    -1     5
     7     7     0
     3    -2    10
```

E4 =

```
    -2    -1     5
     7     7     0
     3    -2    10
```

D5 =

```
    -6     3    12
     6    18    18
     3    15    27
```

E5 =

```
    -6     3    12
     6    18    18
     3    15    27
```

D6 =

```
     7   -35    32
     4   -22    24
    36   -16    24


E6 =

     7   -35    32
     4   -22    24
    36   -16    24


D7 =

    -5   -40    24
    -2   -34    18
    12   -38     4


E7 =

    -6     4    -2
    19   -17    -7
   -14     8   -12
```

Problem #4

```
disp('Problem 4')

A8 = [-4, 3, 1; 5, 6, -2; 2, -5, 4.5];
B8 = [-18.2, -48.8, 92.5]';
x8 = A8 \ B8

Problem 4

x8 =

    2.8000
   -6.4000
   12.2000
```

Problem #5

```
disp('Problem 5')

A9 = [1 2 3; 0 4 5; 0 0 6]
B9 = rand(3)
C9 = rand(3)
D9 = rand(3)

disp('det(A9)')
```

```
disp(det(A9))

disp('det(B9^(-1)A9B9)')
disp(det(inv(B9)*A9*B9))

disp('det(C9^(-1)A9C9)')
disp(det(inv(C9)*A9*C9))

disp('det(D9^(-1)A9D9)')
disp(det(inv(D9)*A9*D9))

%Written portion of this problem is done after the Section 3.2 - 3.4
%of the written homework.
```

Problem 5

```
A9 =

     1     2     3
     0     4     5
     0     0     6


B9 =

    0.0811    0.4868    0.3063
    0.9294    0.4359    0.5085
    0.7757    0.4468    0.5108


C9 =

    0.8176    0.3786    0.3507
    0.7948    0.8116    0.9390
    0.6443    0.5328    0.8759


D9 =

    0.5502    0.2077    0.2305
    0.6225    0.3012    0.8443
    0.5870    0.4709    0.1948

det(A9)
    24

det(B9^(-1)A9B9)
   24.0000

det(C9^(-1)A9C9)
   24.0000

det(D9^(-1)A9D9)
   24.0000
```

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