

Tom Seager - Matlabs Practical - 2100805

by Tom Seager

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Matlabs Practical Assignment

Thomas Seager – 2100805

Q1. a

Q1) Question one: Solve the following equations

$$\begin{aligned} \text{a) } 2x - y + z &= 8 \\ x + 2y + 3z &= 9 \\ 3x - z &= 3 \end{aligned}$$

[5 Marks]

Which can be written the following way:

$$\begin{bmatrix} 2 & -1 & 1 \\ 1 & 2 & 3 \\ 3 & 0 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 8 \\ 9 \\ 3 \end{bmatrix}$$

$$\text{b) } x^2 + 5x + 6 = 0$$

[4 Marks]

```
command window
View to MATLAB? See resources for Getting Started.

>> A=[2 -1 1;1 2 3;3 0 1]

A =

     2     -1     1
     1      2      3
     3      0      1

>> B=[8;9;3]

B =

     8
     9
     3

>> x=A\B

x =

    -1.0000
    -4.0000
     6.0000

>> A*x

ans =

     8.0000
     9.0000
     3.0000

>> |
```

A*x used to check answer.

Q1 b

New to MATLAB? See resources for [Getting Started](#).

```
>> syms x  
>> solve('a=x^2+5*x+6==0',x);
```

Q.2

Q2) Question two:

a) Given $A = \begin{bmatrix} 2 & 0 & 1 \\ 1 & 1 & 1 \\ 2 & -3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 & -1 \\ 3 & -3 & 2 \\ 1 & 1 & 2 \end{bmatrix}$

find:

i) AB

[2 Marks]

ii) $A-B$

[2 Marks]

iii) $A+B$

[2 Marks]

iv) A^T

[2 Marks]

b) Given $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & -1 & 3 \\ 1 & -3 & 4 \end{bmatrix}$, find the determinant of A .

[3 Marks]

i,ii,iii

```
>> a=[2 0 1;1 1 1;2 -3 2]; b=[1 0 -1;3 -3 2;1 1 2];  
>> q=a*b
```

q =

```
     3     1     0  
     5    -2     3  
    -5    11    -4
```

```
>> q=a-b
```

q =

```
     1     0     2  
    -2     4    -1  
     1    -4     0
```

```
>> q=a+b
```

q =

```
     3     0     0  
     4    -2     3  
     3    -2     4
```

lv,

```
>> a'
```

```
ans =
```

```
     2     1     2
     0     1    -3
     1     1     2
```

```
fx >>
```

Q2 b

Command Window

New to MATLAB? See resources for [Getting Started](#).

```
>> A=[1 1 1;2 -1 3;1 -3 4];
```

```
>> detA=det(A)
```

```
detA =
```

```
    -5
```

```
fx >>
```

Q.3

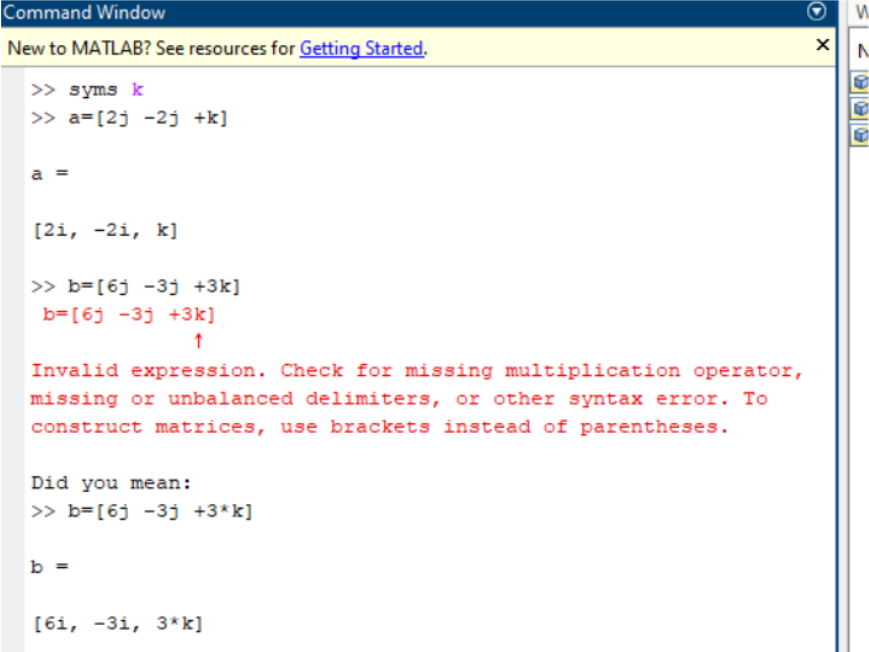
```
>> syms k
>> a=[2j-2j+k]; b=[6j-3j+k];
>> a*b
```

a.1

```
ans =

k*(k + 3i)
```

 >> |



The screenshot shows the MATLAB Command Window interface. At the top, there is a title bar 'Command Window' with a close button. Below it is a yellow banner that says 'New to MATLAB? See resources for [Getting Started.](#)'. The main area contains the following text:

```
>> syms k
>> a=[2j -2j +k]

a =

[2i, -2i, k]

>> b=[6j -3j +3k]
      b=[6j -3j +3k]
            ↑
Invalid expression. Check for missing multiplication operator,
missing or unbalanced delimiters, or other syntax error. To
construct matrices, use brackets instead of parentheses.

Did you mean:
>> b=[6j -3j +3*k]

b =

[6i, -3i, 3*k]
```

On the right side of the window, there is a vertical toolbar with icons for various functions like 'New', 'Open', 'Save', 'Print', etc.

Q.3 B i

```
>> z=-1+2i

z =

    -1.0000 + 2.0000i

>> w=4+i

w =

    4.0000 + 1.0000i

>> z+2w
z+2w
↑
Invalid expression. Check for missing multiplication operator,
missing or unbalanced delimiters, or other syntax error. To
construct matrices, use brackets instead of parentheses.

Did you mean:
>> z+2*w

ans =

    7.0000 + 4.0000i

% >> |
```

ii

```
>> z*w

ans =

    -6.0000 + 7.0000i

% >>
```

iii

```
>> z\w

ans =

    -0.4000 - 1.8000i

fx >> |
```

Q4.

a.

```
Command Window
New to MATLAB? See resources for Getting Started.
>> syms x
>> 3*(x^5)
ans =
3*x^5
>> Df = diff(3*(x^5)*x)
Df =
18*x^5
f_x >>
```

b.

```
Command Window
New to MATLAB? See resources for Getting Started.
>> syms x
>> (sin(5*x)) + (3*(x^5));
(sin(5*x)) + (3*(x^5));
      ↑
Invalid expression. When calling a function or indexing a
variable, use parentheses. Otherwise, check for mismatched
delimiters.

Did you mean:
>> (sin(5*x)) + (3*(x^5));
>> Df = diff (sin(5*x)) + (3*(x^5)), (x)

Df =

5*cos(5*x) + 3*x^5

x =

x

>> Df(x) = 5*cos(5*x) + 3*x^5

Df(x) =

5*cos(5*x) + 3*x^5

>> |
```

C.

Untitled - Window 1

new to MATLAB? See resources for [Getting Started](#).

```
>> syms x
>> xe^(2X);
```

```
>> xe^(2*x);
Unrecognized function or variable 'xe'.
```

```
>> Df =diff(xe^(2*x), (x)
```

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GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

44/100

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