

Name _____

EXCEL EA-1 Quiz 2
July 7th, 2016

Please show your work or describe your reasoning. Do not simply mark an answer without explanation.

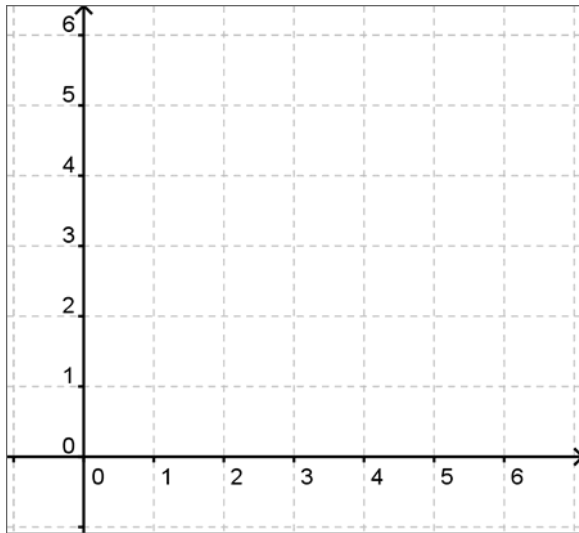
NOTE: there are problems on the back of this sheet!

Problem 1: Linear equations

$$\begin{aligned}2x - y &= 2 \\2x - 3y &= -6 \\x + y &= a\end{aligned}$$

a) Express this system in matrix form $A\vec{x} = \vec{b}$ (write the matrix A and vector \vec{b}).

b) Assume $a = 4$. Plot the lines corresponding to each equation. Does the system have zero, one, or infinite solutions?



- No solutions
- One solution
- Infinite solutions

c) Now, find a value for a such that the system has only one solution (hint: solve the first two equations first).

Problem 2: Booleans

(a) Complete the truth table for the expression $A \& (A \mid B)$

Inputs		Output
A	B	$A \& (A \mid B)$
T	T	
T	F	
F	T	
F	F	

(b) Based on your truth table, can you **simplify** the expression $A \& (A \mid B)$?

Problem 3: “for” loops

	MATLAB Code
1	for i = 1:4
2	
3	disp(i)
4	
5	for j = 1:i
6	disp(i * j)
7	end
8	end

- (a) How many times does the highlighted statement on line 3 run?
- (b) How many times does the highlighted statement on line 6 run?
- (c) What is the value of *i* at the end of the program?

Problem 4: “if” statements

Assume that *a* is already defined in the Workspace.

	Program A	Program B
1	if a > 2	if _____
2		
3	if a < 5	disp(a)
4	disp(a)	
5	end	end
6		
7	end	
8		

Replace _____ with a **compound Boolean expression** so that Program A and Program B produce the same output for any value of *a*. Write your expression below:

Tell me one concept that confuses you, or one question you would like me to answer