Math 1B03 Midterm 1 Info Sheet

The purpose of this handout is to help you study by listing the concepts, definitions, and results you will need to know for the midterm.

Midterm Information. The midterm will be on Wednesday Oct 4, 2017 at 7:00PM. The midterm will be 75 minutes long. Note that we will be spread across 6 different classrooms. Please see below for your room assignment. You will *not* be allowed to bring in any notes, use the text book, or use a calculator.

Please bring your **STUDENT CARD** and **HB PENCILS**. The midterm is a multiple-choice test, and you require an HB pencil in order to fill out the multiple-choice exam sheet (so that the scanner can read your solutions).

In case of conflicts. It is expected that you attend the scheduled midterm. Students who have legitimate conflicts (e.g., an evening class at the scheduled time) will write on Wednesday, Oct. 4, 2016 at 4:30 in MCMST MDCL 1110. Please submit your request to write at an ealier date through the assignment portal. (There is an option on the main page entitled *Request an Alternate Write.*)

Material Covered. This midterm will focus only on the material of Sections 1.1–1.7 that was discussed in class and the homework. Below, I have given a breakdown of what you will need to know from each section. Note that when you are learning terms, it is good to think of an example that satisfies that term, and one that does not satisfy that term.

(Section 1.1) Know what a linear equation is, and what a system of linear equations is. Know the elementary row operations, and know what an augmented matrix is. You should know how many solutions a system of linear equations can have, and you should be able to describe the solution set of a system of linear equations. Also know the terms consistent and inconsistent.

(Section 1.2) Know the difference between the terms reduced row echelon form and row echelon form. Know the difference between free variables and leading variables. Know how to use the elimination procedures of this sections to find a solution to a system of linear equations, and how to use this procedure to turn a matrix into a (reduced) row echelon form. Know how to use the reduced row echelon form of the matrix to determine if a solution has zero, one, or an infinite number of solutions.

(Section 1.3) Know what a matrix is, what we mean by a column vector or row vector, a square-matrix, and the the main diagonal. Know how to add and subtract matrices, how to do scalar multiplication, and how to multiply two matrices together. Know how to express a system of linear equations as a matrix equation (see page 34). Know what the transpose of the matrix is. Also know what the trace of a matrix is.

(Section 1.4) You should know all the arithmetic properties of matrices (Theorem 1.4.1). Know what it means for two matrices to commute. Know what the zero matrix and identity matrix are, and know their properties. Make sure you know which properties matrices fail (see examples 2,3 and 4). Know what it means for a matrix to be invertible, and know the formula for finding the inverse of a 2×2 matrix (see Theorem 1.4.5). Know the properties of matrices described in Theorem 1.4.6, 1.4.7,1.4.8, and 1.4.9.

(Section 1.5) Know what an elementary matrix is. Know how each row operation can be identified with an elementary matrix. Know the statement of Theorem 1.5.3. Know how to use row operations to find the inverse of a matrix (see Example 4).

(Section 1.6) Know the statement of Theorem 1.6.1. Know how to use Theorem 1.6.2 to solve a system of linear equations. Know Theorem 1.6.4 (you don't need to know the proof, but you need to know which statements are equivalent). Know how to determine if a system $A\mathbf{x} = \mathbf{b}$ is consistent (see Example 3).

(Section 1.7) Know what we mean by a diagonal, triangular, and symmetric matrix. Know the properties of symmetric matrices described in Theorems 1.7.2, 1.7.3, and 1.7.4.

(Matlab) There will also be a question relating to the syntax of Matlab.

If you have questions, please feel free to email me. I hope to arrange a midterm review using the Math Help Centre – I'll send out any information via email. Good luck!

Room Assignment. The midterm will be spread across the following 6 rooms. Please go to the room indicated by your last name.

Last Name (between the following letters)	Room
A – BI	BSB 117
BOERE – C	BSB 138
D – HOBBS	JHE 326H
HUANG – KLEIMAN	JHE A101
KORZENIEWSKI - L	JHE A102
M - Z	CDN_MARTYS

Here is the KEY for the above abbreviations:

BSB = Burke Science Building
JHE = John Hodgins Engineering Building
CDN_MARTYS = Canadian Martyrs Testing Centre