Math 1XX3 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 Monday Feb. 13, 2017 at 3:30PM. The midterm will take place in

MCMST JHE 264 and JHE 376

Please go to the following room (based upon your last name):

- JHE 264 – Last name between A and L
- JHE 376 – Last name between M and Z

The midterm will be 50 minutes long. You will *not* be allowed to bring in any notes or use the text book. You will be allowed to use the standard McMaster Calculator (Casio FX-991). Please bring your **Student Card**.

Material Covered. All the material discussed in class may appear on the midterm. We covered Sections 7.4, 9.1-9.5,10.1-10.4. Below, I have given a breakdown of what you will need to know from each section that we covered. 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 7.4 Know how to use partial fractions to integrate rational functions. In particular, know how to set up the partial fractions depending upon how the denominator factors.
Section 9.1 Know the definition of a differential equation and an initial value problem (IVP). Know how to verify that a function is a solution to a differential equation. Know the formulas for the natural growth and logistic differential equation. Know what is meant by the equillibrium of a solution and how to find it.
Section 9.2 Know how to draw and analyze direction fields, and how to use Euler's method to approximate a solution. In particular, know the formula at bottom of page 595.
Section 9.3 Know to rearrange and solve separable equations. You do not need to know about orthogonal trajectories.
Section 9.4 Know the solutions to the natural growth and logistical model differential equations, and be able to use these solutions to answer questions. In particular, know the boxed formulas on page 611 and 614.
Section 9.5 Be able to solve a linear order differential equation by using an integrating factor.
Section 9.6 No questions on the midterm will be based upon this section; learn it because you are curious about the material!
Section 10.1 Know what a parametric curve is, and be able to sketch a parametric curve.
Section 10.2 Given a parametric curve, be able to find the equations of its tangent line, area under the curve, and the arc length. In particular, know the boxed formula on page 649, the area formula on page 651, and the boxed theorem on page 653.
Section 10.3 Know what polar coordinates are; be able to convert from polar coordinates to regular Cartesian coordinates, and vice versa; and be able to draw graphs using polar coordinates.
Section 10.4 Know how to find the slope of tangent lines to curves defined by polar coordinates, and be able to compute the area of curves enclosed by curves defined in terms of polar coordinates. Also, be able to find arc length. In particular, know the boxed formulas on pages 670 and 672.
Section 10.5 No questions on the midterm will be based upon this section; learn it because you are curious about the material!

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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!