

Department of Mathematics and Statistics  
University of Calgary

AMAT 311 L01  
Fall 2006

**Quiz 1a**

Monday, September 25, 16:00-13:50.  
Time: 30 min.

**Calculators are not allowed**

Name:.....

I agree that this paper may be placed at the front of the classroom for pick-up

Signature:.....

**Problem 1. a/ [4 marks]** Find general solution of the differential equation

$$y' + y = x.$$

**b/ [2 marks]** Find the solution of the initial value problem

$$y' + y = x, \quad y(0) = 1.$$

**Problem 2. a/ [6 marks]** Find a function  $y(x)$ , defined for  $x > 0$ , such that

$$y'x \ln x = 1 + y^2, \quad \text{and } y(e) = 1.$$

**Remark:** Evaluate all integrals encountered in solutions to the problems.