

## QUIZ 1

This is a closed-book and closed-notes quiz. You have 20 minutes to solve all the following problems. Write your answers clearly (for example, put the equality symbol where you need it and not just at the end of every line). Calculators are not allowed.

- (1) (10 points) Find the general solution of the differential equation

$$xy \frac{dy}{dx} = x^2 + 3y^2.$$

There is more in the back.

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*Date:* September 26, 2007.

(2) (10 points) Find the general solution of the differential equation

$$(1 + ye^{xy}) + (2y + xe^{xy}) \frac{dy}{dx} = 0$$

(3) (5 BONUS points) Find an antiderivative of the function  $f(x) = \frac{t}{\sqrt{t^2-1}}$ .