

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

TEST 1

MATHEMATICS 2260

JUNE 14TH, 2019

Name

MUN Number

[10] 1. Show that

$$(5ty + 4y^2) + (t^2 + 2ty)\frac{dy}{dt} = 0$$

is not exact, but that it can be made exact. Find the solution.

- [30] 2. Solve THREE of the following four equations, using an appropriate method studied in class. If you solve all four, only your best three will count towards your grade.

(a) $(t^2 - 3t + 2)\frac{dy}{dt} - ty = 0, \quad y(3) = 8$

(b) $t\frac{dy}{dt} - 3y = t^5 \cos(t)$

$$(c) \quad t^2 \frac{dy}{dt} - ty - y^2 = t^2$$

$$(d) \quad \frac{dy}{dt} + \frac{y}{\sqrt{t}} = \frac{y^3}{\sqrt{t}}$$