Math 4241: Integral Calculus & Differential Equations **ID:**
Quiz 2 **2nd March 2022**

---

1. Show that every function defined by, **5**

$$f(x) = 2 + ce^{-2x^2}$$

(CO4)

Where c is an arbitrary constant, is a solution of the differential equation,

$$\frac{dy}{dx} + 4xy = 8x$$

2. Find the explicit solution of the initial value problem **5**

(CO4)

$$\frac{dy}{dx} = -\frac{x}{y}, \quad y(3) = 4$$

Given that the differential equation has a one-parameter family of solutions which may be written in the form,

$$x^2 + y^2 = c^2$$

3. Find the explicit solution for the following initial value problem, **10 (CO4)**

$$y^2\,dx\,+\,(3xy-1)\,dy\,=\,0,\quad x(-1)\,=\frac{1}{2}$$