

系級：\_\_\_\_\_ 學號：\_\_\_\_\_ 姓名：\_\_\_\_\_

1. 試解：(1)  $(2xe^x - y^2)dx + 2ydy = 0$  (2)  $(4x + 3y^2)dx + 2xydy = 0$
2. 試解：(1)  $\frac{dy}{dx} = \frac{y}{2x + y^3e^y}$  (2)  $(2\cosh y + 3x)dx + x\sinh ydy = 0$
3. 試解： $(2y^2 - 9xy)dx + (3xy - 6x^2)dy = 0$
4. 試解：(1)  $x\frac{dy}{dx} - 2y = 16 + \frac{2}{x} - \frac{15}{x^2}$  (2)  $x\frac{dy}{dx} + y = 5x^5$
5. 試解：(1)  $(\sin x)y' + (\cos x)y = \cos 2x$  (2)  $(1 - t^2)y' - 2ty = 2te^t$

**參考解答：**

1. (1)  $x^2 + y^2e^{-x} = c$  (2)  $x^4 + x^3y^2 = c$
2. (1)  $\frac{x}{y^2} - e^{-y} = c$  (2)  $x^3 + x^2\cosh y = c$
3.  $x^2y^3 - 3x^3y^2 = c$
4. (1)  $x^2(\frac{15}{4}x^{-4} - \frac{2}{3}x^{-3} - 8x^2 + c)$  (2)  $\frac{1}{x}(\frac{5}{6}x^6 + c)$
5. (1)  $\frac{1}{\sin x}(\frac{\sin 2x}{2} + c)$  (2)  $\frac{1}{1-t^2}(2te^t - 2e^t + c)$