

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

1. 試判斷下列微分方程的分類。(階數、線性或非線性、ODE 或 PDE)

(a)  $y''' + 4(y')^2 + x^2 y = 4$

(b)  $x^2 y'' + e^x y' + 2y = 0$

(c)  $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = y \sin x$

(d)  $\frac{\partial u}{\partial x} + \frac{\partial^2 u}{\partial y^2} = 2$

(e)  $yy' + \sin x = 0$

2. 試以分離變數法求解  $\frac{y^2}{x} y' = 1 + x^2$