

科目：工程數學二(微分方程)

適用：電機系

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

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❖請務必列出計算過程，否則不予計分。

1. Solve $(2y \tan x + \sec x \ln y)y' + y^2 = 0$. (20%)
2. Solve $xy' = (x+1)y - e^{-x}y^2$. (20%)
3. Assume that $3e^x \sin 6x$ is a solution of differential equation $y'' + ay' + by = 0$ with constant coefficients. Find the values of a and b . (20%)
4. The general solution of the differential equation $x^2y'' + axy' + by = x^2$ is $y = C_1x + C_2x \ln x + y_p$, where y_p is a particular solution. Find $y_p(x)$. (20%)
5. One solution of the ODE $x^2y'' - x^2y' - 2xy' + xy + 2y = 0$ is $y_1 = x$. Find the general solution. (20%)

試

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