

系所組別： 製造資訊與系統研究所丙組

考試科目： 微積分

考試日期： 0226，節次： 3

1. (20 pts). Prove $\frac{d \sin x}{dx} = \cos x$.
2. (20 pts) Prove $\int \frac{dx}{x} = \ln x + C$.
3. (20 pts) Give a numerical example that demonstrates the following property of vector products: $\vec{x} \times \vec{y} = -\vec{y} \times \vec{x}$.
4. (20 pts) Let $y^3 = 8$, where y is a complex number. Give all 3 solutions of y .
5. (20 pts) Find the length of the curve $y^2 = (x/2)^{2/3}$ from $x=0$ to $x=2$.