淡江大學九十一學年度碩士班招生考試試題

系別：資訊工程學系　　　　　科目：數　學（含離散數學、線性代數）

准帶項目請打「○」否則打「×」	
計算機	字典

1. Let $\mathcal{R}$ be a relation defined on $A=\{2,4,6,8,10,12,14\}$,
    where $\mathcal{R}=$"The identical remainder after dividing by 3".
    (a) Proof that $\mathcal{R}$ is an Equivalence Relation.
    (b) Find the Equivalence Classes of A determined by $\mathcal{R}$. (20%)

2. Given data:

y	10	7	4	2	5	9	13
x_1	−3	−2	−1	0	1	2	3
x_2	5	0	−3	−4	−3	0	5

    (a) Find the linear regression model of y on x_1 and x_2.
    (b) $y(4, 7)=?$ (20%)

3. Given a matrix $A = \begin{bmatrix} 3 & -1 \\ 2 & 1 \end{bmatrix}$, find the condition number of A, using ∞ norm. (10%)

4. Solve the relation $a_n - 3a_{n-1} = n, n \ge 1, a_0 = 1$. (25%)

5. Use Euler's Theorem to determine the 5 Platonic solids by means of their associated planar graphs and draw the graphs. (25%)