

亞洲大學

九十五學年度碩士班招生考試試題紙

系 所 別	組 別	考 試 科 目	考 試 日 期	時 間	備 註
資訊學院碩士班		數學 A	95.4.30	13:30-15:10	

1. If $A = \begin{bmatrix} -1 & -4 & 7 \\ -5 & -6 & -8 \end{bmatrix}$ and $B = \begin{bmatrix} 5 \\ -7 \\ 10 \end{bmatrix}$, find AB . (10%)

2. Find the adjoint of the matrix $A = \begin{bmatrix} -7 & -3 & 5 \\ -1 & 9 & -9 \\ 7 & 3 & 1 \end{bmatrix}$. (10%)

3. Is the set $S = \{(1,2,3), (0,1,2), (-2,0,1)\}$ of vectors in R^3 linearly independent or linearly dependent? (10%)

4. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 3 & 3 \\ 0 & -1 & -1 \\ 0 & 0 & -0.25 \end{bmatrix}$. (10%)

5. Find the eigenvalues and corresponding eigenvectors of the matrix $\begin{bmatrix} 1 & 10 & 5 \\ 0 & -4 & 0 \\ 5 & 10 & 1 \end{bmatrix}$. (10%)

6. Find all solutions of the following equation:
 $24x \equiv 6 \pmod{81}$. (10%)

7. Find the number of solutions in integers to $x_1 + x_2 + x_3 + x_4 = 12$ satisfying
 $0 \leq x_1 \leq 4, 0 \leq x_2 \leq 5, 0 \leq x_3 \leq 8, 0 \leq x_4 \leq 9$. (10%)

8. Solve the recurrence relation $9a_n = 6a_{n-1} - a_{n-2} + 5n^2$ with initial conditions
 $a_0 = 1, a_1 = 2$. (10%)

9. Given examples of relations on $\{1, 2, 3, 4\}$ having the properties specified in the following: (a) reflexive, antisymmetric, and not transitive, (b) not reflexive, not symmetric, and transitive. (10%)

10. Show that K_5 is not planar? (10%)