淡江大學 106 學年度碩士班招生考試試題

科目:線性代數 本試題共 7 大題, 2 頁 (a).____ The liner system whose equations are all homogeneous must have a unique solution

44-1

(b). _____ There are two matrices A and B. If AB = BA, then A is equal to B.

(c). If vectors $u \neq 0$ and $v \neq 0$, then $u \cdot v \neq 0$

系別:資訊工程學系 B 組

考試日期:3月4日(星期六) 第2節

1. (15Pts) Ture-False (是非題)

本試題雙面印刷

(d). If Ax = b has a unique solution, then the Ax = c also must have a unique solution.

(e). _____Two equivalent vectors may not have the same initial points.

(10pts) Find all values of x in order for A to be invertible: 2.

 $A = \begin{bmatrix} 1 - x & 5 & x^2 \\ 0 & x & x - 5 \\ 0 & 0 & x - 1 \end{bmatrix}$

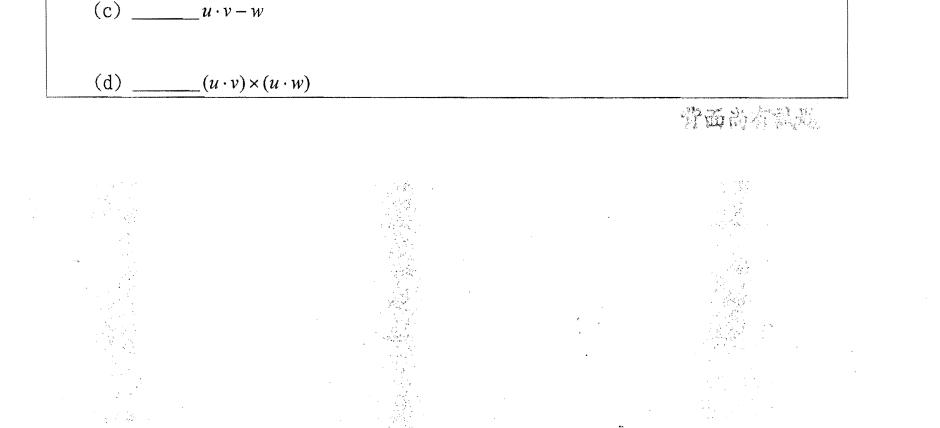
3. (12 pts) Determine the value of "a" for which the system is inconsistent;

$$\begin{cases} x+2y-3z=2\\ 2x-2y+3Z=1\\ x+2y-az=0 \end{cases}$$

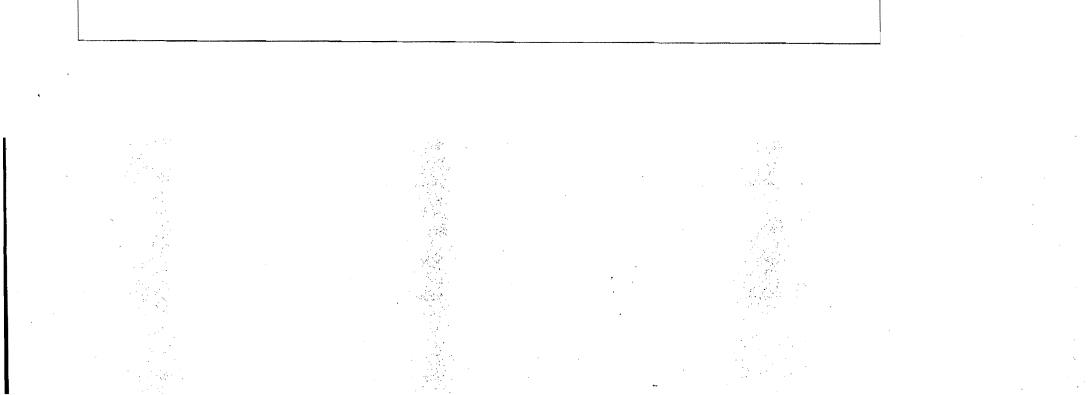
4. (8 pts) <u>True/False</u>: Let u, v, w are vectors in n-space; determine whether the expression makes sense mathematically? (T: make sense; F: NOT make sense)

$$(a) _ u \cdot v - || u \cdot v ||$$

(b) $|| u || \cdot || v ||$



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5. (15 pts) Suppose that $u \cdot (v \times w) = 1$, Find	$v \cdot (w \times w) = ?$	
6. (30 pts) Let vectors $u = (-1,1,0)$ and $v = (1,1,2)$		
(a) Find the distance between u and v		
(b) Find the radian measure of angle between u and v \vdots		
(c) Find a point-normal from the equation of the plane through A	P = (0,1,0) and have $u = (-1,1,0)$ as a normal	al. :
7. (10 pts) Calculate det(A): (Show detailed work to go 多拿到一半分數)	et fill credits 詳細為出計算過程, 否	則至
$A = \begin{bmatrix} 2/3 & 0 & -3/2 & 1/3 & 3\\ 2/3 & 2/3 & 5/2 & 8/5 & -3/2\\ 4/3 & -2/3 & -1/2 & -3/5 & 1/2\\ 2 & 0 & 2 & 1 & -1\\ 9/4 & 7/4 & 5/4 & 3/4 & 1/4 \end{bmatrix}$		



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