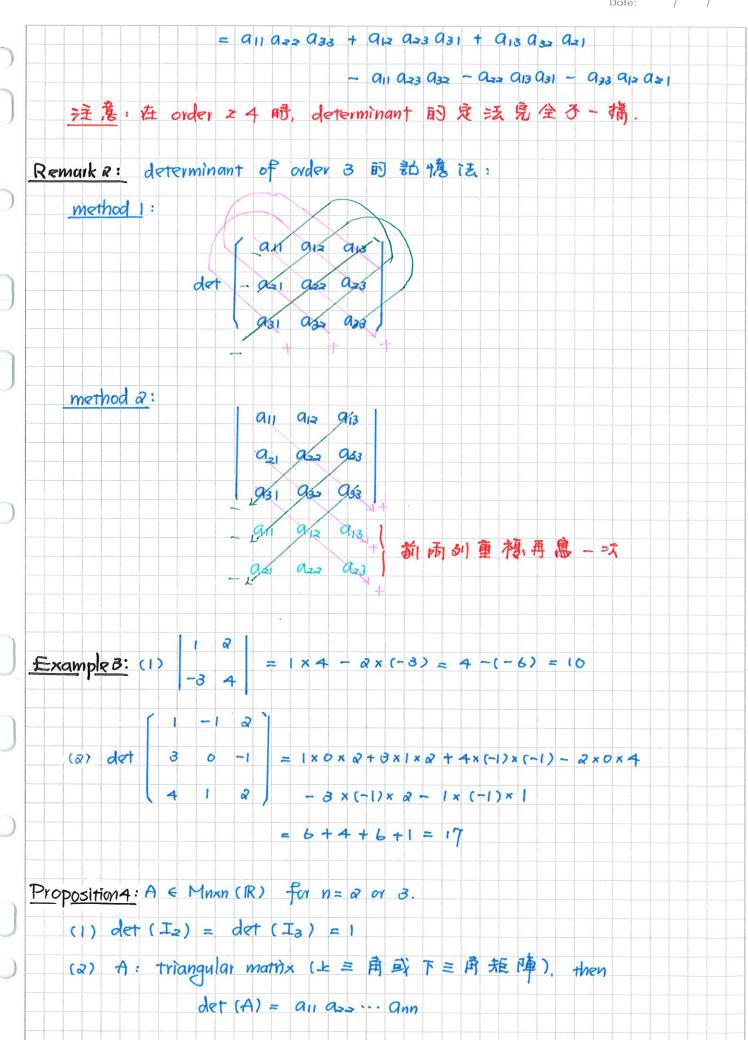
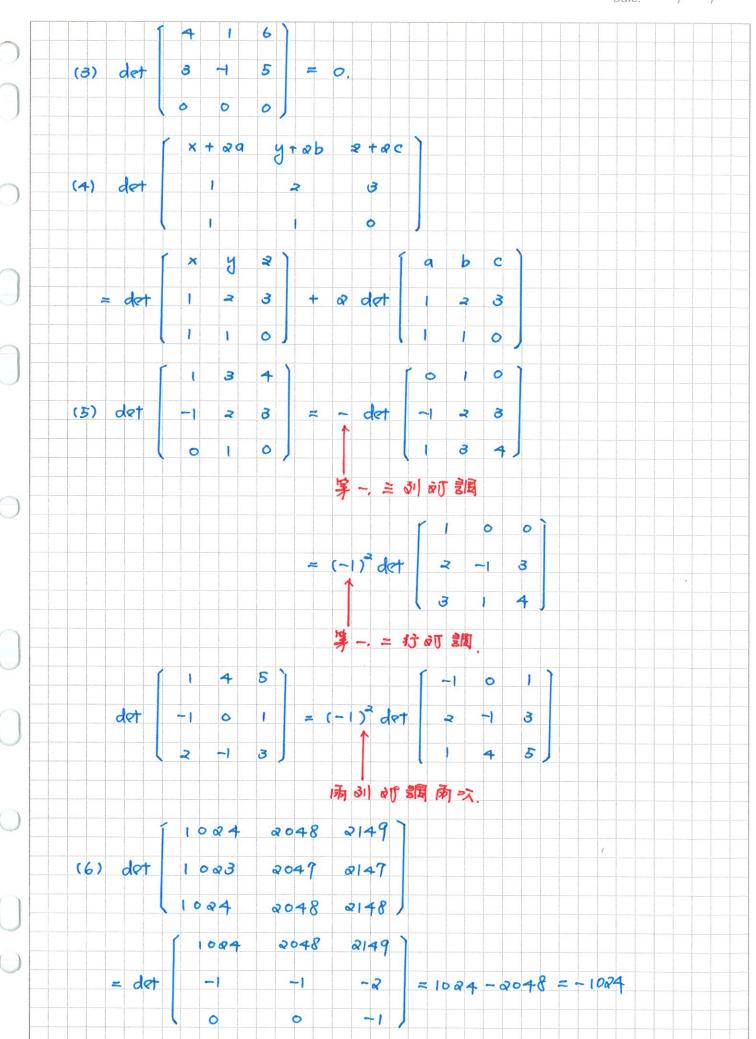
2. Determinants (行动) 武)	
行列式是個心門在馬中時已般學過	的概念,在针列式的order
= 2. 3 時的 # 黄质、彩想 大部分的	司答應該都治有問題,引
基本上,"太多粉"的性质在所有的	order 都 at.
為計學多計論 determinants? determina	
存度污。底下311出一些墨本的妆质。) 原用,
1. Test for invertibility:	
A: muertible det	(A) = A † O.
這是於訓치最重多的應用.	
a. The determinant of A = the volume of 這個用法在环門以務署重適分	
的事物事顿更是有用.	
3. Solving the system of linear equations	Ax = b
4. Find A-1	
5. Find the eigenvalues (国有证) of A.	
由 动 determinant of order a & order 3.	动坏啊大多的人来器盗鸹
模就了.我在这裏就思大眼四一些	至泉影嶼 4天 人
2.1 Properties of the determinants of cyd	Pr ≤ 8
Definition 1: (1) A & Mora (IR). the determin	inant of A is defined by
$det(A) = A = det \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix}$	$\begin{vmatrix} 12 \\ 22 \end{vmatrix} = a_{11} a_{22} - a_{12} a_{21}$
(2) A & Max3 (IR). the determinant of	A is defined by
det (A) = det (a21 a22 a23)	
A31 A22 A58	



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(3) If A has a row (column) of zeros, then det (A) = 0.
      (4) The determinant depends linearly on each row and each column,
              \det \begin{pmatrix} A_{11} + CB_{11} & A_{12} + CB_{12} \\ A_{21} & A_{22} \end{pmatrix} = \det \begin{pmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{pmatrix} + C \det \begin{pmatrix} B_{11} & B_{12} \\ A_{21} & A_{22} \end{pmatrix}
            但注意下到情况
             det (A+CB)
             = det (A) + CB) A2+ CB2
             = det(A) + c det\begin{pmatrix} A_{11} & A_{12} \\ B_{21} & B_{22} \end{pmatrix} + c det\begin{pmatrix} B_{11} & B_{12} \\ A_{21} & A_{22} \end{pmatrix} + c^{2} det(B)
            行到或並不保留 OD (云, i.e., det (A+B) # det (A) + det (B).
      (5) The determinant changes sign when two rows or two columns are
            exchanged.
             (A \xrightarrow{(E1)} B, then det(A) = -det(B))
      (6) Subtracting a multiple of one row (column) from another row
            (column) leaves the same determinant.
             (A \xrightarrow{(E3)} B, then det(A) = det(B)).
      (7) If two rows or two columns of A are equal, then det (A) = 0.
Example 5: (1) det ( ) = 1 = det ( ) 0
     (a) \det \begin{pmatrix} 2 & 0.4185 & 6 \times 10^{23} \\ 0 & -1 & 3.24171 \\ 0 & 0 & 3 \end{pmatrix} = 2 \times (-1) \times 3 = -6.
```



		Date:	1	/
\bigcirc	(7) det 4 1 8 = 0.			
	Remark 6: A. B & Muxu (IR). C & IR. then			
\bigcirc	det (A + B) # det (A) + det (B)			
	$det(cA) = c^n det(A)$			
	Proposition 7: A. B & Muxn (IR). for n = 2 or 3.			
	(1) A: invertible \iff det (A) \neq 0.			
	(2) der (A·B) = der (A)· der (B).			
	In particular,			
	det (A) =			
	det (A)			
\bigcirc	(3) $det(A^T) = det(A)$,			
	$proof$: (a) $det(A) \cdot det(A^{-1}) = det(A \cdot A^{-1}) = det(In) = 1$			
	⇒ det (A') = det (A).			
\bigcirc				
\bigcirc				