姓名:_____ 葉均承 應數一線性代數

學號: _____ **Quiz 14** 考試日期: 2025/12/24

不可使用手機、計算器，禁止作弊!

1. Using Cramer's rule to find the component x_2 of the solution for the given linear system.

$$\begin{cases} 6x_1 + x_2 - x_3 = 4 \\ x_1 - x_2 + 5x_4 = -2 \\ -x_1 + 3x_2 + x_3 = 2 \\ x_1 + x_2 - x_3 + 2x_4 = 0 \end{cases}$$

Answer: $x_2 =$ _____

2. Let A be an $n \times n$ matrix. Prove that $\det(adj(A)) = \det(A)^{n-1}$.

3. Let $T : P_2 \to P_3$ be defined by $T(p(x)) = (x-1)p(x+2)$, the ordered basis for P_2 is $B = (x^2 - x, x^2 + x, 1)$ and the ordered basis for P_3 is $B' = (x^3, x^2, x, 1)$. Fine the standard matrix representation A of T relative to the ordered bases B and B'.

   Answer: (a) A _____, (b) Find the $ker(T) =$ _____

   (c) Given $p(x)$ so that $p(x)_B = [1, 2, 5]$, find $p(x) =$_____, $T(p(x)) =$ _____