姓名: SOLUTION　　葉均承　　應數一線性代數

學號: _____　　**Quiz 6**　　考試日期: 2025/10/22

不可使用手機、計算器，禁止作弊!

1. Given vectors $\vec{w}_1 = [1, 2, -1, 2], \vec{w}_2 = [-2, -3, 3, 1]$ and $\vec{w}_3 = [4, 7, -5, 3]$.
   (a) Determine whether the vectors $\{\vec{w}_1, \vec{w}_2, \vec{w}_3\}$ form a basis for the $sp(\vec{w}_1, \vec{w}_2, \vec{w}_3)$. (Yes / $\boxed{No}$)
   (b) Determine whether the vectors $\{\vec{w}_1, \vec{w}_2\}$ form a basis for the $sp(\vec{w}_1, \vec{w}_2)$. ($\boxed{Yes}$ / No) .
   (c) Determine whether the vectors $\{\vec{w}_1, \vec{w}_3\}$ form a basis for the $sp(\vec{w}_1, \vec{w}_3)$. ($\boxed{Yes}$ / No) .
   (d) Is $\{\vec{w}_1, \vec{w}_2, \vec{w}_3\}$ a linear independent set? (Yes / $\boxed{No}$) .
   (e) Is $\{\vec{w}_1, \vec{w}_2\}$ a linear independent set?? ($\boxed{Yes}$ / No) .
   (f) Is $\{\vec{w}_1, \vec{w}_3\}$ a linear independent set?? ($\boxed{Yes}$ / No) .

   p.s. 記得每小題要分開給理由 !!

Solution：

Similar with 113-1 quiz 6 problem 1.

2. Prove or disprove that the sum of two solution vectors of any homogeneous linear system is also a solution vector of the system.

Solution：

1-6 #38 (g) or Theorem 1.13 with $r = s = 1$.