姓名: SOLUTION 葉均承 應數一線性代數

學號: _____ **Quiz 1** 考試日期: 2023/09/20

1. 請框出答案. 2. 不可使用手機、計算器，禁止作弊!

1. Given $\vec{u} = [1, 3, 2]$, $\vec{v} = [-2, 5, 1]$, $\vec{w} = [-1, 19, -4]$ and $\vec{p} = [-1, 19, 8]$.

   (a) Is $\vec{w} \in sp(\vec{u}, \vec{v})$? True **False** .

   If so, find r= × , s= × $\in \mathbb{R}$ such that $\vec{w} = r\vec{u} + s\vec{u}$.

   (b) Is $\vec{p} \in sp(\vec{u}, \vec{v})$? **True** False .

   If so, find r= **3** , s= **2** $\in \mathbb{R}$ such that $\vec{p} = r\vec{u} + s\vec{u}$.

2. Let $\vec{v}$ and $\vec{w}$ are any two vectors in $\mathbb{R}^n$, and let r be any scalar in $\mathbb{R}$. Please prove the following property.

$$r(\vec{v}+\vec{w}) = r\vec{w} + r\vec{v}.$$

Solution：

Similar with example 4 from 1-1. Notice that the order of $\vec{v}$ and $\vec{u}$ is not the same on both sides of the equation.