1. 請框出答案. 2. 不可使用手機、計算器，禁止作弊!

1. Find the projection of $[\,1,\,0,\,0]$ on the subspace $W = sp([2,1,1],[1,0,2])$ in $\mathbb{R}^3$

Answer: _____$\dfrac{1}{7}[5,3,1]$_____

$$\vec{b} = [0,0,1], \vec{v}_1 = [2,1,1], \vec{v}_2 = [1,0,2],$$

$$\vec{v}_3 = \vec{v}_1 \times \vec{v}_2 = [2,-3,-1]$$

$$\overrightarrow{b_{W^\perp}} = \frac{\vec{b} \cdot \vec{v}_3}{\vec{v}_3 \cdot \vec{v}_3}\,\vec{v}_3 = \frac{1}{7}[2,-3,-1]$$

$$\vec{b}_W = b - \overrightarrow{b_{W^\perp}} = \frac{1}{7}[5,3,1]$$