Q1. Find the area of the parallelogram whose vertices are given by $A=(1,0,-1)$, $B=(1,7,2)$, $C=(2,4,-1)$, $D=(0,3,2)$.

Q2. Find a formula for the area of the triangle in the $xy$-plane with vertices at $(0,0)$, $(a_1, a_2)$ and $(b_1, b_2)$. 
Q3 Let $\vec{a}$ and $\vec{b}$ be two vectors such that $\vec{a} \cdot \vec{b} = 4$. If $\vec{u} = \text{proj}_b \vec{a}$. Find $\vec{v} = (2\vec{a} + \vec{u}) \cdot \vec{b}$.

Q4 Let $\vec{a} = <1,2,-1>$ and $\vec{b} = <0,3,-2>$. Find $\tan \theta$, where $\theta$ is the angle between $\vec{a}$ and $\vec{b}$.

Q5 Let $\vec{v} = <0,1,-1>$ and $\vec{w} = <-1,0,1>$. Find a point $P = (x, y, z)$ in the plane $z = 2$ satisfying the following conditions: $\overrightarrow{OP}$ and $\vec{v} + \vec{w}$ are perpendicular and the volume of the parallelepiped determined by $\overrightarrow{OP}, \vec{v}$ and $\vec{w}$ is equal to 3.