HW #2

Question 1. Find the projection of $\langle -1, 8, 1 \rangle$ onto $\langle 3, -2, -3 \rangle$.

Question 2.

(1) Find a vector $\vec{v}$ such that $\langle 2, -1, 1 \rangle \times \vec{v} = \langle -1, 6, 0 \rangle$, or explain why such $\vec{v}$ cannot exist.
(2) Find a vector $\vec{w}$ such that $\langle 2, -1, 1 \rangle \times \vec{w} = \langle -1, 6, 8 \rangle$, or explain why such $\vec{w}$ cannot exist.

Question 3. Find the area of the triangle with vertices $P = (-2, 5, 5)$, $Q = (-2, 6, 6)$, $R = (2, -2, 5)$.

Question 4. Find the two unit vectors that are orthogonal to $\langle 4, 1, -1 \rangle$ and $\langle 6, 4, 1 \rangle$.

Question 5. Consider the points $A = (2, 0, -1)$, $B = (-3, 1, 1)$, $C = (-1, 4, 0)$, $D = (2, 1, 5)$. Find the volume of the parallelepiped with adjacent edges AB, AC, and AD.