Worksheet 5/5/2025

Let $A(1, 1, 1)$, $B(0, -1, 2)$, $C(3, 1, -4)$ be three points in the three-dimensional space.

(1) Find the coordinates of vectors $\overrightarrow{AB}$, $\overrightarrow{AC}$, $\overrightarrow{BC}$, $\overrightarrow{CB}$.

(2) Find the perimeter of the triangle ABC.

(3) Find the angle at vertex A of the triangle ABC.

(4) Find a normal vector of the plane containing A, B, C.

(5) Find the area of the triangle A, B, C.

(6) Find the equation of the plane containing A, B, C.

(7) Find the parametric equation of the line passing through A and perpendicular to the plane containing A, B, C.

(8) Find the projection of B on the line AC.