1. Consider the triangle with vertices $A(4, 4, 3)$, $B(3, 2, 1)$ and $C(5, 1, 1)$.

   (a) Show that the triangle is right-angled.

   (b) Let $\vec{a}$ be the vector from $A$ to $B$, and $\vec{b}$ the vector from $A$ to $C$. Find and simplify the vector $4\vec{a} - 3\vec{b}$.

2. Consider the sphere with equation $(x + 3)^2 + (y - 2)^2 + (z + 1)^2 = 14$.

   Find the unit direction vector from the origin to the center of the sphere.