COMP 3501 Assignment #2 Part I

Due in class, September 29, 2010. Show your work.

1a. Given vectors $\vec{u} = 2i - 4j + 2k$ and $\vec{v} = i + 6j - 3k$, what is $\vec{u} + \vec{v}$?

1b. Given vectors $\vec{u} = 4i - j - 3k$ and $\vec{v} = 2i + 7j + 9k$, what is $\vec{u} - \vec{v}$?

1c. Given vectors $\vec{u} = -2j + 4k$ and $\vec{v} = i - 2j + k$, what is $\vec{u} \cdot \vec{v}$?

1d. Given vectors $\vec{u} = -2j + 4k$ and $\vec{v} = i - 2j + k$, what is $\vec{u} \times \vec{v}$?

2. Given the points (expressed as vectors) $\vec{a} = -i + 2j - 5k$ and $\vec{b} = 6i + 4j - 4k$, how far apart are they?

3. You have points $\vec{s} = 3i - 4j + 5k$ and $\vec{t} = 2i + 4j - k$.
3a. Give a unit vector pointing in the direction from $\vec{s}$ to $\vec{t}$.

3b. Give a unit vector pointing in the direction from $\vec{t}$ to $\vec{s}$.

4. Suppose you have a triangle whose corners are $\vec{a} = 3i - 2j + 3k$, $\vec{b} = 3i + 6j - k$, and $\vec{c} = 2i + 3j + 2k$. Give a normal vector for this triangle.