Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Suppose $\mathbf{a} = -2\mathbf{i} - 3\mathbf{k}$ and $\mathbf{b} = 5\mathbf{i} - \mathbf{j} + 2\mathbf{k}$. Find $2\mathbf{a} + \mathbf{b}$ and $5\mathbf{a} - \mathbf{b}$.

2. Find the magnitude of the vector $\langle -8, 6 \rangle$.

3. Find a unit vector in the direction of $\mathbf{v} = 2\mathbf{i} - \mathbf{j} - 2\mathbf{k}$.