

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

1. Find $(-\vec{i} + 2\vec{j} - 4\vec{k}) \cdot (2\vec{i} + 3\vec{k})$.

$$\begin{aligned} & \langle -1, 2, -4 \rangle \cdot \langle 2, 0, 3 \rangle \\ & = (-1 \cdot 2) + (2 \cdot 0) + (-4 \cdot 3) \\ & = -2 + 0 - 12 \\ & = \underline{-14} \end{aligned}$$

Good

2. Find $(-\vec{i} + 2\vec{j} - 4\vec{k}) \times (2\vec{i} + 3\vec{k})$.

$$\begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ -1 & 2 & -4 \\ 2 & 0 & 3 \end{vmatrix}$$

$$\begin{aligned} & - \frac{6\vec{i} - 8\vec{j} + 0\vec{k}}{0\vec{i} - 3\vec{j} + 4\vec{k}} \\ & \underline{6\vec{i} - 5\vec{j} - 4\vec{k}} \end{aligned}$$

Good