

Section 12.4: Additional Problems

1. Given $\mathbf{a} = \langle 2, -2, 1 \rangle$ and $|\mathbf{b}| = 4$, what is the maximum value of $|\mathbf{a} \times \mathbf{b}|$.
2. Find a vector that is orthogonal to the plane $2x + 3y + 5z = 30$
3. Find the volume of the parallelepiped determined by the vectors $\langle 1, 0, 6 \rangle$, $\langle 2, 3, -8 \rangle$, and $\langle 8, -5, 6 \rangle$
4. Are these vectors co-planer. Justify your answer.

$$\mathbf{a} = 4\mathbf{i} - 7\mathbf{j} + \mathbf{k}$$

$$\mathbf{b} = -\mathbf{i} + 4\mathbf{j} + 2\mathbf{k}$$

$$\mathbf{c} = -\mathbf{i} + 2\mathbf{j}$$