1. Find the angle between the body diagonals of a cube.

2. Prove that \([A \times (B \times C)] + [B \times (C \times A)] + [C \times (A \times B)] = 0\). Under what conditions does \(A \times (B \times C) = (A \times B) \times C\)?

3. The vectors from the origin to the points A, B, C, D are

\[
\begin{align*}
A &= x + y + z \\
B &= 2x + 3y \\
C &= 3x + 5y - 2z \\
D &= -y + z
\end{align*}
\]

Show that the lines AB and CD are parallel and find the ratio of their lengths.

4. If \(A\) is a constant vector and \(r\) is the position vector (the vector from the origin to point \((x, y, z)\), show that the following is the equation of a sphere:

\[(r - A) \cdot r = 0.\]

5. Problems 1.13, 1.20, 1.26