Suggested problems

Computing the cross product

P1: Let \( \mathbf{u} = \langle -2, 5, 10 \rangle \), \( \mathbf{v} = \langle -6, -3, 5 \rangle \). Compute \( \mathbf{u} \times \mathbf{v} \). Verify that \( \mathbf{u} \times \mathbf{v} \) is orthogonal to both \( \mathbf{u} \) and \( \mathbf{v} \).

P2: Let \( \mathbf{u} = \mathbf{i}, \mathbf{v} = j + 2k \). Compute \( \mathbf{u} \times \mathbf{v} \).

P3: Let \( \mathbf{u} = 4\mathbf{i} - 3\mathbf{k}, \mathbf{v} = -12\mathbf{i} + 9\mathbf{k} \). Compute \( \mathbf{u} \times \mathbf{v} \).

Additional problems of this type at COW:

3. Calculus Book III
   > 2. Vectors and Analytic Geometry
   > 4. The Cross Product
   > 1. The cross product

P4: Let \( \mathbf{u} = \langle 0, 0, -5 \rangle, \mathbf{v} = \langle 1, -2, 3 \rangle \). Find a vector orthogonal to both \( \mathbf{u} \) and \( \mathbf{v} \). Give a unit vector which is orthogonal to both \( \mathbf{u} \) and \( \mathbf{v} \) as well.

P5: Let \( \mathbf{u} = 3\mathbf{i} - 4\mathbf{j} + \mathbf{k}, \mathbf{v} = \mathbf{i} + \mathbf{j} - 2\mathbf{k} \). Find a vector orthogonal to both \( \mathbf{u} \) and \( \mathbf{v} \). Give a unit vector which is orthogonal to both \( \mathbf{u} \) and \( \mathbf{v} \) as well.

Additional problems of this type at COW:

3. Calculus Book III
   > 2. Vectors and Analytic Geometry
   > 4. The Cross Product
   > 3. Vector normal to two given vectors