The cross product

The triple scalar product - suggested problems

Let
\[ u = <1, -4, 6> \quad v = <-10, 5, 4> \quad w = <-1, 0, 1> \]

P1: Compute the triple scalar product \( u \cdot (v \times w) \) from the definition (i.e, cross, then dot).

P2: Compute the triple scalar product \( u \cdot (v \times w) \) using the determinant structure.

P3: Verify for these vectors that
\[ u \cdot (v \times w) = (u \times v) \cdot w \]

P4: Find the volume of a parallelepiped with edges
\[ u = 3i - 2j + k \quad v = 4i \quad w = 2i + 6j \]

See if you can sketch it - it’s not too bad, since the base lies in the xy plane.