'Where shall I begin, please your Majesty?' he asked.
'Begin at the beginning,' the King said gravely,
'and go on till you come to the end: then stop,'
Lewis Carroll
_Alice’s Adventures in Wonderland_

**Worksheet 1**

1. Given vectors \( \mathbf{u}, \mathbf{v} \) and \( \mathbf{w} \), draw the vectors
a) \( \mathbf{u} + \mathbf{w} \);
   b) \( \mathbf{u} + \mathbf{v} + \mathbf{w} \);
   c) \( \mathbf{v} - \mathbf{w} \);
   d) \( -\frac{1}{2} \mathbf{u} + 2 \mathbf{w} \);
   e) \( \mathbf{u} - \mathbf{v} + \mathbf{u} - \mathbf{v} + \cdots - \mathbf{v} + \mathbf{u} \);

2. Let \( \triangle ABC \) be a triangle with medians \( AA', BB' \) and \( CC' \).
Prove that
a) \( AA' = \frac{1}{2}(AB + AC) \);
   b) \( AA' + BB' + CC' = 0 \).

3. \( \square ABCD \) is a parallelogram with the vertices \( A(-6,-1), B(1,2), D(-3,-2) \). Find the coordinates of the point \( C \).
4. Determine if the triangle $ABC$ with $A = (1, 2, 3)$, $B = (2, 1, 3)$, $C = (3, 1, 2)$, is obtuse-angled.

$\angle ABC > \frac{\pi}{2}$.

5. Find the angle between the main diagonal of a cube and the diagonal of one of its faces.

6. (The Converse Pythagorean Theorem)
Let $ABC$ be a triangle such that $|AB|^2 + |BC|^2 = |AC|^2$. Show that $ABC$ must be a right triangle.