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by randomusername

- 1 The ratio of the sides of a parallelogram is $\lambda > 1$. Given λ , determine the maximum of the acute angle subtended by the diagonals of the parallelogram.

- 2 Prove that if we erase $n - 3$ diagonals of a regular n -gon, then we may still choose $n - 3$ of the remaining diagonals such that they don't intersect inside the n -gon; but it is possible to erase $n - 2$ diagonals such that this statement doesn't hold.

- 3 Consider the sets A_1, A_2, \dots, A_n . Set A_k is composed of k disjoint intervals on the real axis ($k = 1, 2, \dots, n$). Prove that from the intervals contained by these sets, one can choose $\lfloor \frac{n+1}{2} \rfloor$ intervals such that they belong to pairwise different sets A_k , and no two of these intervals have a common point.
