MathLovers

Problems 06.10.2025

Solutions to the problems below
will be published on Thursday 09.10.2025

Problem 1. During the Chopin Competition, the jury evaluates pianists on a scale from 1 to 25 points. Assume that in the first stage there are n participants.

Each juror gives each participant an integer score from the interval $[1, 25]$. A participant's result is defined as the arithmetic mean of the scores after discarding the highest and the lowest one.

Let $a_1, a_2, \ldots, a_k$ be the scores of the same pianist from k jurors.

Decide whether there exist integers $a_1, \ldots, a_k$ such that, after removing the largest and the smallest value, the average **does not change** compared to the situation when no score is removed.

Problem 2. Let X, Y be the projections of points B, C respectively onto the tangent at point A to the circumcircle of triangle ABC. Let M be the midpoint of BC. Prove that $|MX| = |MY|$.

Good luck!

We encourage you to submit your solutions via
https://mathlovers.eu/submit-solution/!