

1. Let $A \subset \mathbb{R}^2$ be convex body and $0 \in \text{int} A$. Suppose that for each $p \in \mathbb{R}^2$ $|A \cap \langle p \rangle^+| = |A \cap \langle p \rangle^-|$. Proof that A is centrally symmetric.
Hint: recall what volume is and how it can be expressed in polar coordinates. How to use Fourier series?