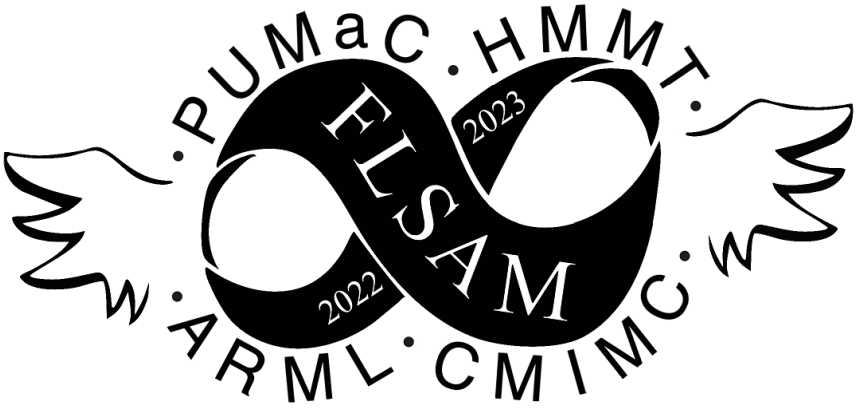
Florida Student Association of Mathematics



2024 FLSAM PUMAC Tryout

October 26-27, 2024

Round 3: Geometry

Welcome to the **2024 FLSAM PUMAC Tryout!** This is round three of four, each of which will consist of four problems to be completed in 30 minutes. Scoring is simply based on correct answers; there is no penalty for wrong answers. Good luck!

1. Consider triangle ABC with $BC = 12, AB = 6, CA = 10$. Let M be the midpoint of BC. Let AM meet the circumcircle of ABC at D. Compute the area of BCD.

2. Rectangle $ABCD$ has $AB = 12$ and $BC = 5$. Line ℓ splits the rectangle into two parts with equal area and meets AB at E. A line perpendicular to line ℓ that goes through E meets BC at F, compute the maximum possible area of EBF.

3. Consider triangle ABC with $AB = 6$, $AC = 8$. Let M be the midpoint of minor arc BC, and let I be the incenter. Given $AM = 8$, compute AI.

4. Points A, B, C, D lie on a circle. AC and BD intersect at E. Given that the reflection of E over BC is concyclic with $ABCD$, $AB = 4, BC = 7, CD = 8$, compute DA.