



Problem of the Week #2

9/12/2022 to 9/25/2022

Pick  $n \geq 3$ , and divide a circle into  $2n$  arcs by placing  $2n$  points on its boundary subject to the following conditions:

- i. there are only three allowable arc lengths;
- ii. no adjacent arcs have the same length;
- iii. vertices are colored alternately red and blue.

Prove that the  $n$ -gon formed by the red vertices and the  $n$ -gon formed by the blue vertices have the same perimeter *and* the same area as each other.

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Solutions for this problem can be submitted to Dr. Brian Miceli at [bmiceli@trinity.edu](mailto:bmiceli@trinity.edu). People who submit solutions will be acknowledged on the next problem. If you like these problems, you may be interested in the Putnam Exam, and more information on the Putnam Exam may be found [HERE](#).

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Solutions to the previous problem were submitted by Matthew A. Brom (Albany, NY), Ritwik Chaudhuri (India), Rob Hill (Gambrills, MD), Hari Kishan (India), Lukas Klawuhn (Germany), Tengiz Kutchava (Georgia, the country), Jeff Liese (San Luis Obispo, CA), Yann Michel (Paris, France), Jorge Roberto Pech May (Campeche, México) Benjamin Phillabaum (Lafayette, IN), Luciano Santos (Lisboa, Portugal), François Seguin (Amiens, France), Dennis Ugolini (Trinity), and Steve Wiese (Austin, TX).