

Re: United Airlines magazine has surprisingly hard geometry problem

Source: <http://sci.tech-archive.net/Archive/sci.math/2004-07/7744.html>

From: David Bernier (david250_at_videotron.ca)

Date: 07/29/04

Date: Thu, 29 Jul 2004 15:22:16 -0400

Bart Goddard wrote:

>
>> *Embedding the picture into a regular polygon? That's interesting. One friend I showed it to immediately thought of treating the triangle as one "wedge" of a regular 18-gon, and I think that he concluded that if lines CD and AE were extended, they would be diagonals of the 18-gon. But he didn't see what to do after that. Can this approach be pushed through?*
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>
> *Along the same lines, I was thinking of drawing out the Morley picture (the extended one, like the second graphic at <http://mathworld.wolfram.com/MorleysTheorem.html>) and chasing down all the angles. I'm wondering if the central large equilateral triangle doesn't have a side which contains EF, or is parallel to it.*

In a Math Arxiv preprint, math.MG/9508209 by Bjorn Poonen and Michael Rubinstein entitled:

``The Number of Intersection Points Made by the Diagonals of a Regular Polygon'',

the authors write on page 4 in paragraph 2:

" The classification of three-diagonal intersections also solves Colin Tripp's problem [15] of enumerating adventitious quadrilaterals, those convex quadrilaterals for which the angles formed by sides and diagonals are all rational multiples of Pi."

David Bernier