SSMU Abstract

Paul Myrin, pmyrin@fgcu.edu

April 27, 2023

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Randomly pick a set of k points on the grid in the center of the poster. Connect those points to create a closed figure whose edges do not intersect. How many points are entirely within the shape just created? Randomly pick another set of k points and create a similar shape. How many points are entirely within the new shape just created? Repeat this process over and over again. On average, how many points will be entirely within the shape chosen at random?

Utilizing tools from combinatorics, number theory, and, of course, geometry, we obtain general results for rectangles and multi-dimensional prisms as well as empirical results for right triangles.