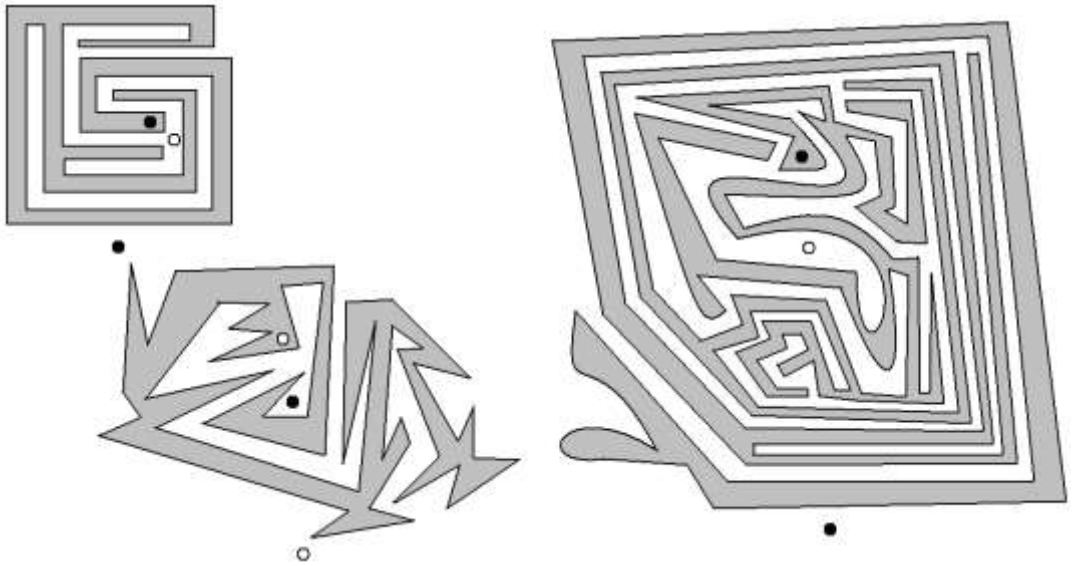
WITHOUT WORDS

Mathematical Puzzles to Confound and Delight

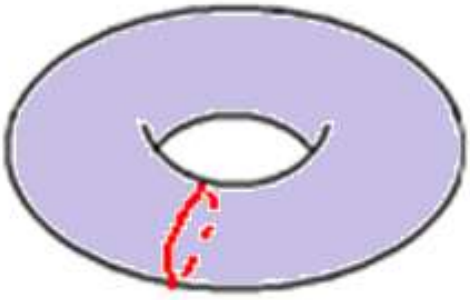
WW 1: SOLUTION



The goal here is to determine which dot lies in the interior of each figure.

A very famous theorem in mathematics, called the *Jordan Curve Theorem*, establishes that every (non-intersecting) closed loop drawn in the plane divides the plane into two regions. We usually call one region the "inside" and the other the "outside."

It seems strange that mathematicians would feel the need to prove something so utterly obvious, but French mathematician Camille Jordan (1838-1922) realized that actually it is a deep statement about two-dimensional space. His theorem says something profound about the "shape" of a plane. For example, the Jordan Curve Theorem is NOT true for loops drawn on the surface of a donut: it is possible to draw a loop on this surface that fails to have an inside and an outside.



Question: Does the Jordan Curve Theorem seem to hold true for all loops drawn on the surface of a sphere? Is there a clear inside?