

The Problem of the Month December 2020

The regular tetrahedron is one of the five Platonic solids. It has four faces, all identical equilateral triangles. It also has four vertices. As such, a small regular tetrahedron can be inscribed inside a larger one with the four vertices of the small tetrahedron placed at the in-centers of the four faces of the larger one. See the picture below. If the large tetrahedron has all of its edges of length S , find the volume contained in the larger tetrahedron but outside the smaller inscribed one. Express this as a function of S and evaluate it when $S = 1$.

