

## The Problem of the Month September 2021

The simplest Archimedean spiral is given by the polar equation  $r = \theta$  where  $\theta$  is given in radians. See picture below. Consider the unit square with all vertices of the form  $(\pm 1/2, \pm 1/2)$ . Clearly the spiral starts off inside the square at the origin but quickly grows so that it spirals around outside the square. As such, the spiral must intersect the square at a point, where it crosses from inside to outside. Find the coordinates of this point to two places of accuracy. You must show your work as a simple cursor location probe is not acceptable.

