ALLYSA LUMLEY, York University

Bringing Solids of Revolution to Life for First Year Calculus Students

First year students in calculus classes tend to find the concept of a solid of revolution challenging—transitioning from a 2D region to a 3D surface is difficult to visualize. Over the years, I've experimented with various methods to help students grasp this idea, including classic freehand drawings and video simulations with varying degrees of success. However, this past semester, I had a breakthrough: an innovative project that allowed students to create a real-life solid of revolution using just paper, scissors, and glue. The outcomes were surprising and enlightening. Not only did students gain a deeper understanding of this complex topic, but they also made connections across multiple learning objectives, from Riemann sums and limits to volume and surface area calculations.

In this talk, I'll discuss what I learned throughout the process of using a project based learning approach for a class of 70+ students, showcase some of the impressive work my students submitted and discuss possible research avenues for this style of calculus engagement.