In this presentation, we will compare three different types of undergraduate research projects I have mentored. In the first project, we studied a classical article published in the sixties about the optimal constant of the Poincaré inequality on convex domains. In the second project, we worked on an open problem related to my research interests obtaining some new results. This work was submitted for possible publication to a peer-reviewed journal. The third project is about developing a resource for Calculus to stimulate critical thinking, among others goals, based on Sophisms and erroneous resolutions. (Received September 03, 2019)