

Abstract

If the length of the perimeter of a figure is given, what is the greatest area that can be enclosed? This age-old question is called the isoperimetric problem. Its origins date back to antiquity but a thorough and complete solution was not offered until the 19th century. In this thesis we will reveal the solution to the isoperimetric problem and present some distinctly different ways in which one can arrive at a conclusive answer.

We will also examine a few variations of this problem. For instance, one could look at a pentagon and ask oneself what type of pentagon would maximise the area when the length of the perimeter is given. This would then fall under the isoperimetric problem for polygons. Moreover, we will explore some results that bear a resemblance to the original problem. Lastly we take a brief look at the isoperimetric problem in higher dimensions.