Think Outside the Circle:

Redefining the Area Under the Parabola

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Abstract

This paper redefines the area of the region under the parabola bounded by the x-axis. It is based off Archimedes' quadrature of the parabola, which handles the concept of utilizing triangles to approximate the area under the parabola, as well as Riemann's sum. Circles will be applied to obtain a general formula to find the area of the region in this research paper. Two methods are used to derive the formula. The first method involves applying the focus and latus rectum of the parabola to pose an equation for any parabola. However, results show that this method does not work for every parabola. A second method is slightly more successful in finding a less tedious manner to approximate the area under the parabola. Although the method works for one parabolic segment, it does not work for the other, which is illustrated later in the paper. Therefore, it is concluded that neither of the methods were successful in achieving a general formula to find the area of the region under the parabola bounded by the x-axis with circles.