

Problem 1 (suggested by Prof. Matt Brin) (due Monday, September 14)

A loop of string has fixed length  $L$ . It is looped around a disk of radius  $r$  and pulled tight at one point so as to form an "ice cream cone" shape as pictured here. Consider the region labeled  $A$  that is inside the loop of string, but outside the disk. Note that the area of  $A$  is zero if either  $r=0$  or if  $r=L/2\pi$ . What value of  $r$  maximizes the area of the region  $A$  and what is this maximum value of the area?

This was our warm-up problem but only two solutions were received, from John Giaccio and Yuqiao Huang, both correct. Both solutions are similar to the solution discussed in the following link [Solution](#)

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