PROBLEM OF THE MONTH #2

MARCH 2020

Directions: Write a complete solution to the problem below showing all work. Your paper must have your name, W#, and Southeastern email address. Solutions are to be placed in the envelope for Problem #2 located in the Department of Mathematics Office, Fayard 308 by 12:00 noon, **Tuesday, March 31**. No late papers will be accepted.

All papers with a correct solution will be entered in a drawing for a great prize!

Questions concerning the problem of the month should be sent to either Dr. Tilak de Alwis (tdealwis@selu.edu), or Dr. Dennis Merino (dmerino@selu.edu)

PROBLEM: *Minimizing a Perimeter*

Consider the function $f(x) = \frac{1}{x}$ where $x > 0$. Let O be the origin, P be any point on the graph of f, and Q be the x-intercept of the tangent line to the graph of f at P.

(a) Find the minimum possible perimeter of the triangle OPQ. Provide the exact and simplified answer.

(b) What is the largest possible area for the inscribed circle of the triangle OPQ? Provide the exact and the simplified answer.

Note: Partial answers might still be considered. So all submissions are welcome!