PROBLEM OF THE MONTH #2

SEPTEMBER 2019

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 4:30 p.m., **Monday, September 30**. 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: *Common Tangents*

Consider the circles given by the equations $x^2 + y^2 = 25$ and $(x - 6)^2 + y^2 = 4$.
(a) Find the length of the common tangents to the circles.
(b) Find the equations of the common tangents in part (a).

In the above, a "common tangent" means a line which is simultaneously tangent to both circles. Provide the exact and simplified answers.

(*Problem was inspired by a discussion with David Busekist, Department of Mathematics, SELU*)