PROBLEM OF THE MONTH #2

MARCH 2016

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., **Thursday, March 24**. 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. Randy Wills (rwills@selu.edu)

Problem:

Consider the function F defined by

$$F(x) = \int_0^x \frac{t-1}{t^4 - 4t^3 + 6t^2 - 4t + 2} \, dt \quad \text{for } 0 \leq x \leq 2 .$$

Find the maximum and minimum values of F. Provide the exact answers, and give complete mathematical justification.