PROBLEM OF THE MONTH #2

OCTOBER 2014

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, November 6**. 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: *Parabola, Tangents and Rectangles*

A parabola with a vertical axis of symmetry is tangent to the three straight lines $y = 2x + 3$, $y = x + 2$, and $y = -x + 6$. Find the maximum area of a rectangle inscribed in the region bounded by this parabola and the x-axis, where the base of the rectangle is on the x-axis, and its top two vertices are on the parabola. Refer to the figure below. Provide the exact answer.