Problem of the Month #1

November 2012

Open to all students whose mathematics classes come solely from the following list: Math 92, Math 155, Math 161, Math 162, Math 163, Math 165, Math 167, Math 168, Math 185, Math 241, or Math 267 or their equivalent.

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 #1 located in the Department of Mathematics Office, Fayard 308 by 4:30 p.m., Tuesday, December 4. 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:

What is the longest pencil that can fit into each of the following 3-dimensional shapes? Your answer will be in terms of the variable $r$.

(a) A cube with side of length $r$
(b) A right circular cylinder with radius $r$ and height $r$
(c) A sphere of radius $r$