

PROBLEM OF THE MONTH #1

APRIL 2015

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 177, Math 287, Math 185, Math 241, or Math 277 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., **Wednesday, May 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 : *A Bouncing Ball*

A bouncing ball is thrown vertically upward with an initial velocity of 64 ft/sec . The ball goes up and comes back down hitting the ground at a velocity of -64 ft/sec . The ball bounces and goes back up at a velocity of 32 ft/sec . It continues going up and going down. Each time it bounces, it leaves the ground with a velocity that is $-1/2$ of the velocity it hit the ground with. The height h of the ball, t seconds after being thrown vertically with an initial velocity of v_0 is given by $h = -16t^2 + v_0t$.

How far has the ball traveled when it hits the ground the tenth time?