

PROBLEM OF THE MONTH #1

MARCH 2016

Open to all students whose mathematics classes come solely from the following list: Math 92, Math 105, Math 151, 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., **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 :

Ten people were shipwrecked on a desert island owned by a renowned big game hunter Boris Badinoff. Upon finding them, Boris gave them a choice to either be set free on the island where he would hunt them down and kill them, or have a chance to live by solving a puzzle. Facing certain death, the 10 castaways chose to try to solve the puzzle. The puzzle is as follows:

The castaways are lined up from tallest to smallest, and each castaway is given a white shirt which has either a red bullseye or a blue bullseye on the back. The castaways do not know which color bullseye is on their back, but they can see the color of everyone's bullseye who is in front of them. Starting with the tallest castaway, and ending with the smallest castaway, each one is allowed to say either RED or BLUE, and nothing else. They must also remain looking forward at all times. Failure to follow these rules results in instant death for all of them. In order for Boris to spare their lives, and take them to safety, 9 out of 10 castaways must correctly identify the color of the bullseye on their back. If they don't succeed, they will all be killed. The castaways are given 10 minutes to come up with a strategy to solve the puzzle and avoid death.

What strategy should they use in order to guarantee survival? You may assume that all the castaways hear each person's color. You must clearly explain the solution to this puzzle or condemn the castaways to death.