

# PROBLEM OF THE MONTH #1

OCTOBER 2021

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 175, 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 sent as a SINGLE PDF FILE to the submission address [talwissubmissions@selu.edu](mailto:talwissubmissions@selu.edu), with the subject heading of the email as Problem of the Month #1 – October 2021, by 11:59 p.m., **Friday, October 29**. No late papers will be accepted.

All papers with a correct solution will be entered in a drawing for a great prize! Anyone can submit solutions, but only currently enrolled students are eligible for prizes.

Questions concerning the problem of the month should be sent to either Dr. Tilak de Alwis ([tdealwis@selu.edu](mailto:tdealwis@selu.edu)), or Dr. Dennis Merino ([dmerino@selu.edu](mailto:dmerino@selu.edu))

## PROBLEM: *Take a Moment to Reflect On...*

A mirror  $AB$  is placed along the line  $y = 10x$ . A light ray  $PQ$  is coming along the line  $y = 5x + 40$  and strikes the mirror at the point  $Q$ . The reflected ray  $QR$  is such that the angle  $PQA$  is equal to the angle  $RQB$ .

- Find the equation of the reflected light ray  $QR$ . Provide the exact answer.
- Find the approximate angle  $PQR$  between the incident and the reflected rays. Provide the approximate answer (two decimal places)

Note: Partial answers might still be considered. All submissions are welcome!

