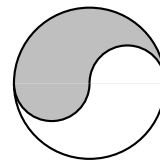


Fall 2009 MPC – Set 2, Due by 5pm on Friday, Oct. 16.

Instructions: Welcome to the Fall'09 GSU Mathematics Problem Solving Competition! All GSU Undergrads are eligible. Submit your solutions to the Mathematics office. Please include your name and e-mail address. Have fun! For more information, go to:
http://math.georgiasouthern.edu/math/math_competition/math_competition.php

1. (Proposed by V. Maymeskul) Some time after noon, a secretary of the GSU Department of Mathematical Sciences left the office for lunch. When she came back, she noticed that the minute and hour hands of the clock switched. Assuming that the lunch did not last more than an hour, what time did the secretary leave the office and what time did she come back?

2. (Proposed by F. Ziegler) Can the shaded region (whose boundary consists of three half-circles) be cut into four pieces of equal area? Of equal area *and* shape?



3. (Unknown) Suppose that M is an integer with the property that if x is randomly chosen from the set $\{1, 2, 3, \dots, 999, 1000\}$, the probability that x is a divisor of M is $1/100$. If $M \leq 1000$, determine the maximum possible value of M .
