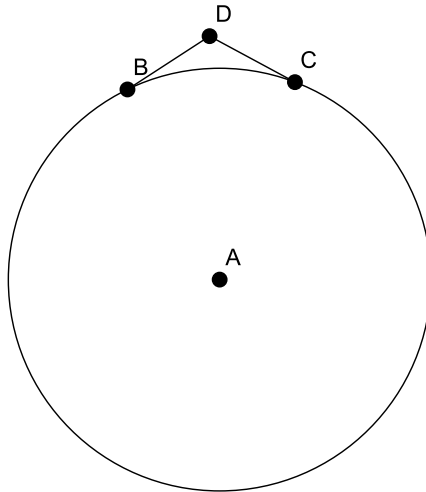


Problems of the Month
University of Louisiana at Lafayette
October, 2016

Solutions must be submitted by 11/13/2016. They can be emailed or handed in to Calvin Berry (cberry@louisiana.edu) or Leonel Robert (lrobert@louisiana.edu).

1. A spherical planet has a radius of 6400 kilometers. A rope that is one centimeter longer than the circumference of the planet is stretched tight as shown, so that the length of DB equals that of DC. How high is the point D above the surface of the planet?



2. It is known that each of four people A, B, C, and D tells the truth in a given instance with probability $1/2$. Suppose that A makes a statement, and then D says that C says that B says that A was telling the truth. What is the probability that A was actually telling the truth?

3. Show that the series

$$\sum_{n=2}^{\infty} \frac{(-1)^n}{\sqrt{n}(\ln n)^t}$$

converges conditionally, but not absolutely, for all real t .