

2018-2019 Undergraduate Problem Solving Contest

Problem Number 4

Due February 19, 2019

Fido Racing

Pat, Shannon and Fido (their dog) are on a circular path 100 feet around. Fido is very excited. Shannon starts walking around the path maintaining a speed of 1 foot per second, while Pat stands still. Fido begins racing back and forth between Pat and Shannon on the circular path along the section of path Shannon has NOT walked on. What is Fido's overall average speed if he has just returned to Pat for the 5th time when Shannon gets to the halfway point? Assume Fido maintains a constant speed of 3 feet per second for his last run back to Pat. Also assume that Fido met Shannon at equally spaced moments in time (including the start).

New and old problems are posted online at
<http://www.math.utah.edu/undergrad/involvement.php>

In the spirit of UPSC, you should not use the internet or look up the solution in a book. Please include your name, student ID number, and email address on your solution. Submit answers at the front desk of the T. Benny Rushing Mathematics Center.