

Problem 2: Black Night

USMA D/Math Problem of the Week

Submission Deadline: September 27, 2007 at 1600

Circle one: cadet faculty non-usma student non-usma faculty other

Problem Statement: Three treasure hunters are traversing a jungle in the dead of night looking for a jewel-encrusted box filled with gold. They split up, and at midnight arrive at *independent* random positions along an old road represented by the interval $x \in [0, 2000ft]$. They don't know it, but the box is sitting on the road at precisely $x = 1800ft$. With flashlights, they can see up to $200ft$ along the very straight, flat road.

- (a) What is the probability that one of them can see the box?
- (b) The box is too big to carry alone, and shouts for help travel only $300ft$ in the night. What is the probability that the box will be found *and* someone will be in range to come help carry it away? [Assume the hunters do not move along the road.]

Submit your answer to Dr. Elisha Peterson at ae3263@usma.edu as an attachment to your email, with the subject line **WP POTW**. Or drop your solution off in my mailbox or on my desk (with date and time please!)