



## **STEP II, 2018, Q10 EC**

The qualities of responses for this question were quite varied. Many candidates who struggled with this question failed to set up the speed of a point on the string in the first part of the question and were therefore unable to make any significant progress. In the part of the question considering the return journey a common error was to “restart the clock” once the ant had reached the endpoint, however, since the speed of the string is dependent on the time from the start of the problem this led to an error.

A particularly elegant solution to the final part involved changing the frame of reference such that the endpoint was stationary and the peg was moving at constant speed. Stronger candidates were then able to use the symmetry of the problem to reduce the amount of algebra needed considerably.



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