

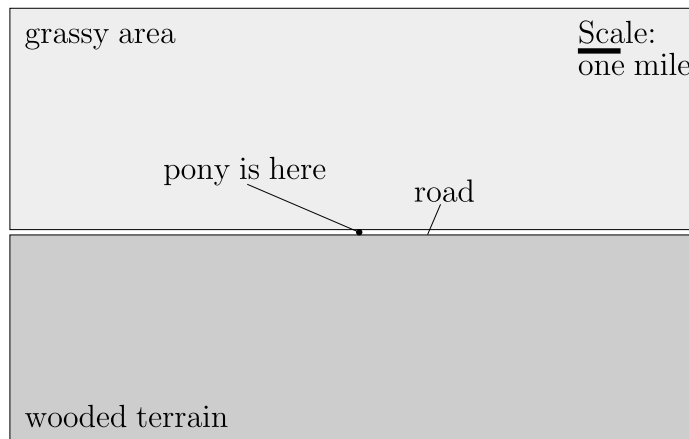
Don't fence me in

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A pony is standing still on a long straight road. The road surface is such that the pony can move along the road at 5 miles per hour.

On one side of the road is a grassy area through which the pony can travel at 4 miles per hour.

On the other side of the road is wooded terrain through which the pony can travel at 3 miles per hour.



Suppose you want to build a fence that would enclose all of the area that the pony can reach in one hour. (Ignore the width of the road.) Show where the fence would go if:

1. Once the pony starts in a given direction it does not change direction. (Show fence with a solid line.)
2. The pony moves freely. (Show fence with a dotted line.)

In each case explain your answer.

Hints

Hint to problem 2. Consider the following:

- What happens if the pony backtracks? For example, if it goes into the grassy area for 15 minutes, then turns around and comes back to where it began?
- How might the pony go into some areas not included in problem 1? Notice that it moves quickest along the road. Could it reach the edge of the problem 1 area in the wooded terrain in less than an hour? What if it went into the woods at *that* point?