Lesson 23: Nonlinear Motion

Classwork

Exercise

A ladder of length ft. leaning against a wall is sliding down. The ladder starts off being flush (right up against) with the wall. The top of the ladder slides down the vertical wall at a constant speed of ft. per second. Let the ladder in the position slide down to position after second, as shown below.



Will the bottom of the ladder move at a constant rate away from point ?

Consider the three right triangles shown below. Specifically the change in the length of the base as the height decreases in increments of ft.





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| Input | Output |
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Problem Set

1. Suppose the ladder is feet long, and the top of the ladder is sliding down the wall at a rate of ft. per second. Compute the average rate of change in the position of the bottom of the ladder over the intervals of time from to seconds, to seconds, to seconds, to seconds, and to seconds. How do you interpret these numbers?

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| Input | Output |
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1. Will any length of ladder, , and any constant speed of sliding of the top of the ladder ft. per second, ever produce a constant rate of change in the position of the bottom of the ladder? Explain.