

Advanced Challenge Level 2 Problem #9

A particle is moving in one direction in a straight line. Initially, the particle is moving at 3 centimeters per second. Its speed is measured and recorded at the end of each second for 10 seconds. The results are shown in the table below.

Time (seconds)	0	1	2	3	4	5	6	7	8	9	10
Speed (cm per sec.)	3	4	4.5	5.5	6	7	8.5	9	10	12	13

In addition, you are told that the acceleration, although clearly not constant, is non-negative. In other words, the particle does not slow down at any time during the 10 second interval shown. It is possible, however, that the particle maintains a constant speed during short time intervals with periodic rapid, even instantaneous, acceleration.

Your job for this problem is to determine the total distance traveled by the particle during this 10 second time interval. Of course, you won't be able to give the exact value. However, you should be able to determine the minimum distance traveled and the maximum distance traveled (given the speed information). Write your answers in the spaces provided below. Make sure that you do your own work on this problem. Also, make sure that you show and clearly describe whatever process you use to get your answers. Good luck.

1. The minimum distance traveled by the particle is _____.
2. The maximum distance traveled by the particle is _____.