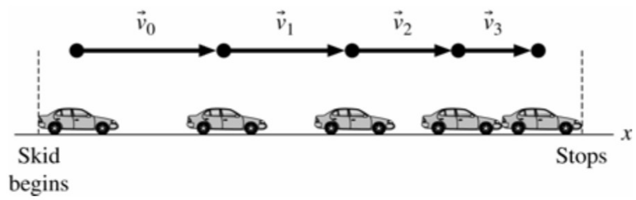
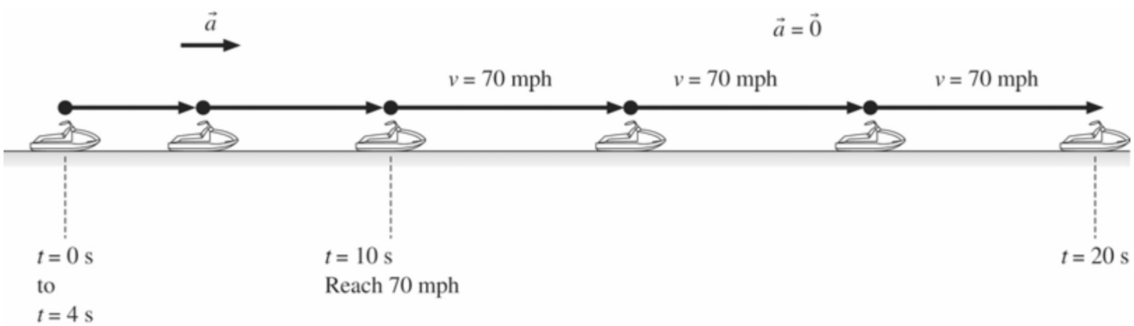
1.1. Model: Model the car as a particle. Imagine a car moving in the positive direction (i.e., to the right). As it skids, it covers less distance between each movie frame (or between each snapshot).
Solve:



Assess: As we go from left to right, the distance between successive images of the car decreases. Because the time interval between each successive image is the same, the car must be slowing down.

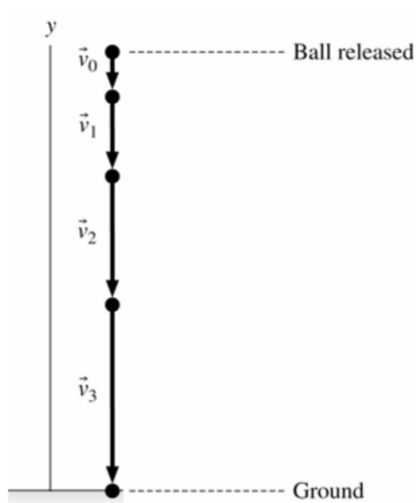
1.3. Model: Model the jet ski as a particle. Assume the speeding up time is less than 10 s, so the motion diagram will show the jet ski at rest for a few seconds at the beginning.

Solve:



Assess: Notice that the acceleration vector points in the same direction as the velocity vector because the jet ski is speeding up.

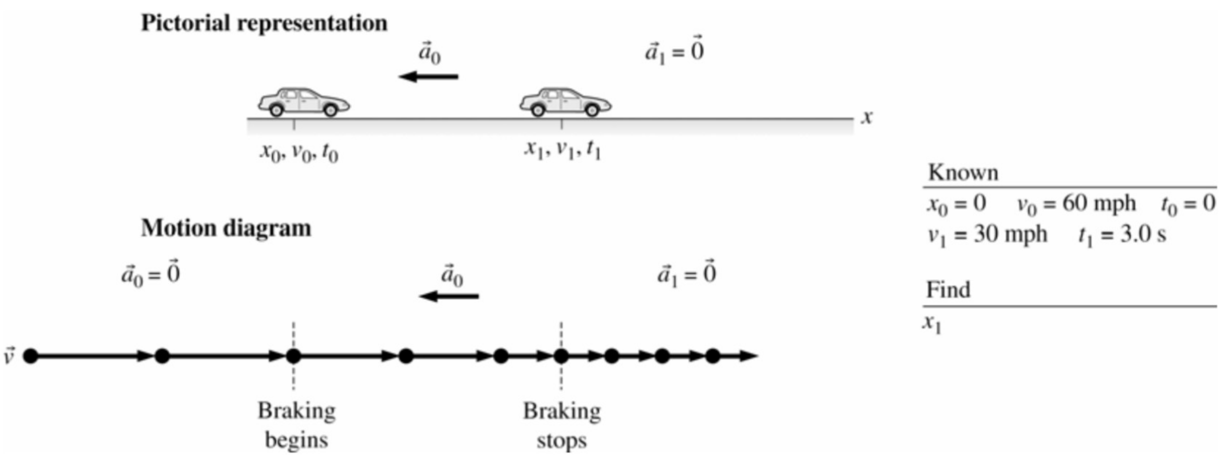
1.5. Model: We model the ball's motion from the instant after it is released, when it has zero velocity, to the instant before it hits the ground, when it will have its maximum velocity.
Solve:



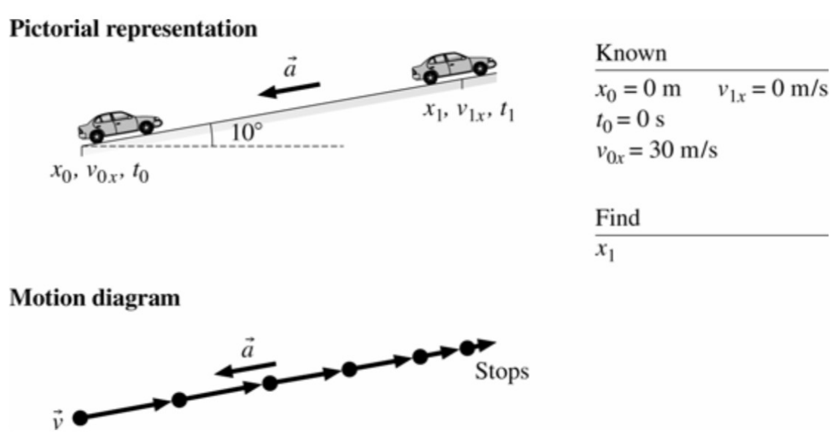
Assess: The average velocity keeps increasing with time since the ball is speeding up as it falls.

Note: These are the solutions to the textbook exercises.
The extra x vs. t plots are on the following page.

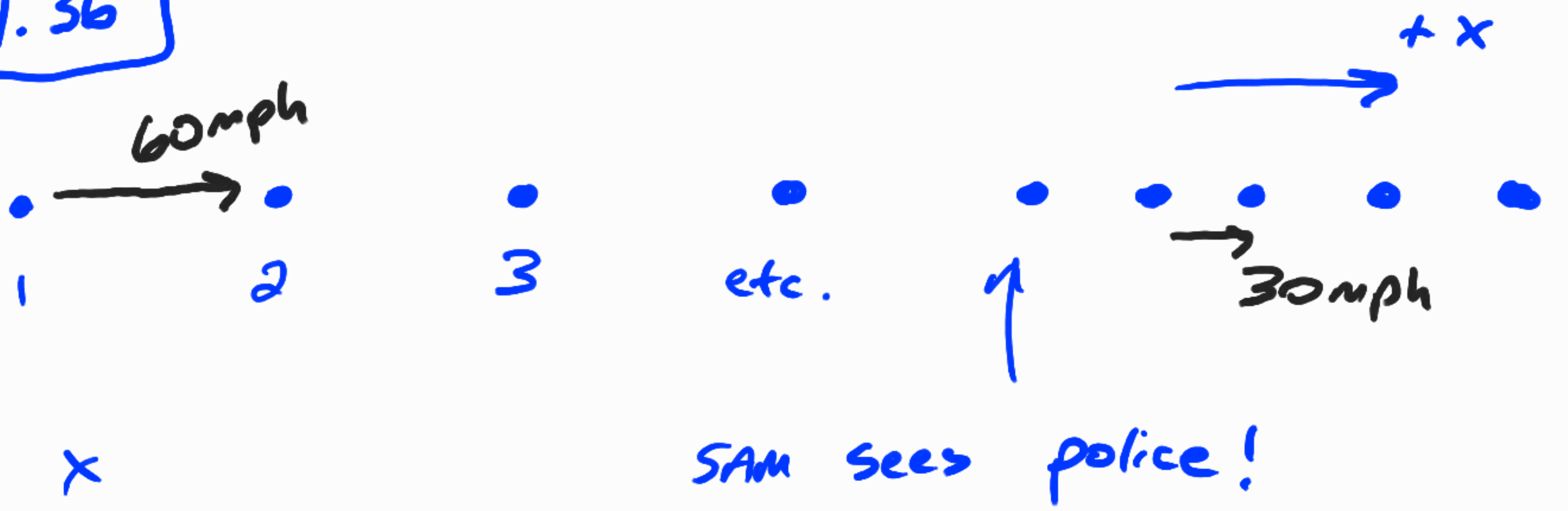
1.36. Model: Represent (Sam + car) as a particle for the motion diagram.
Visualize:

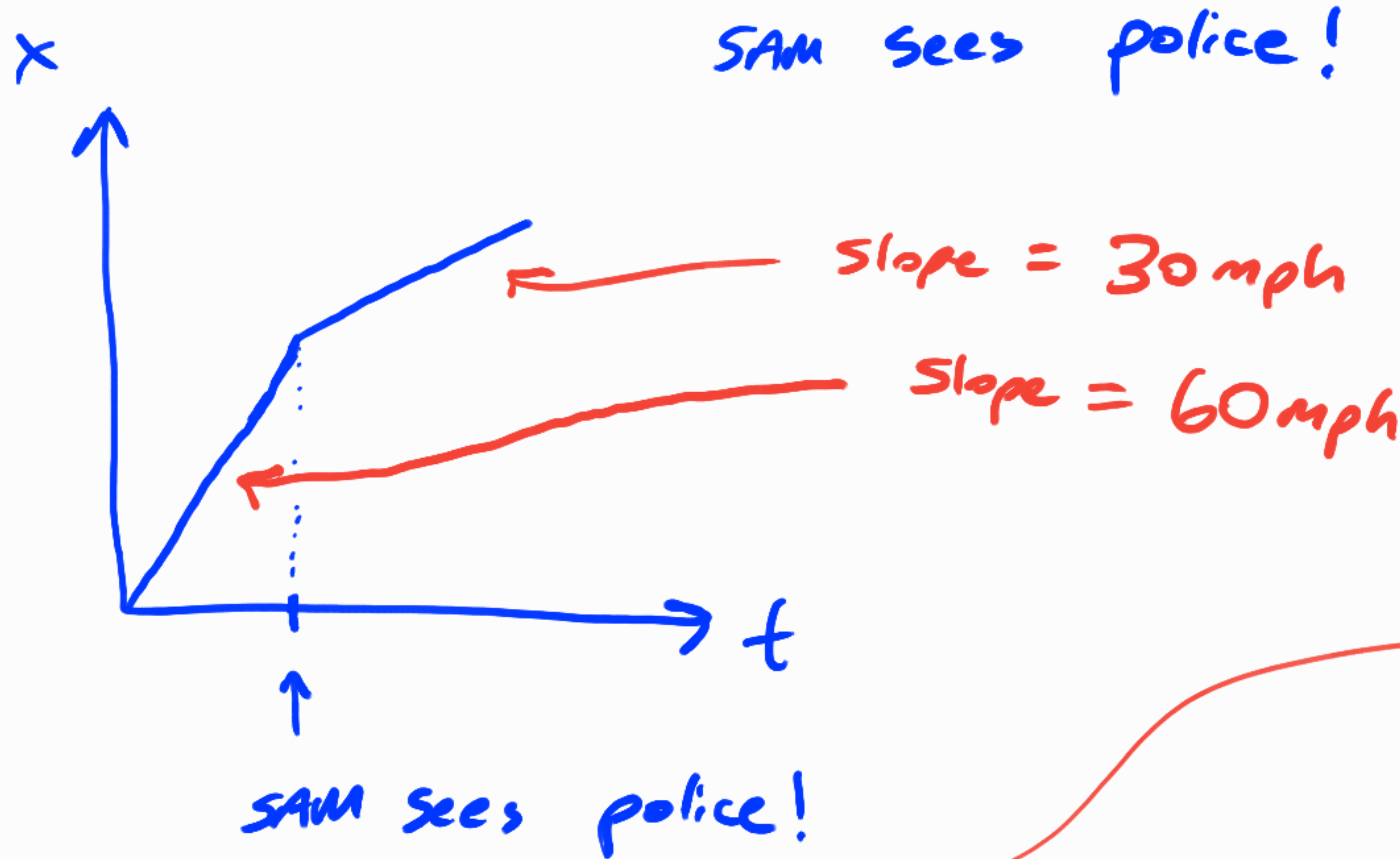


1.41. Model: Represent the car as a particle for the motion diagram.
Visualize:



1.36





1.41

Positive x-direction is along the ramp, up the ramp.