

2. [8 points] A car is traveling on a long straight road. The driver suddenly realizes that there is a stop sign exactly 40 feet in front of the car and immediately hits the brakes. The car's velocity decreases for the next two seconds as the car slows to a stop.

Let $v(t)$ be the velocity of the car, in feet per second, t seconds after the driver hits the brakes. Some values of the function v are shown in the table below.

t	0	0.5	1	1.5	2
$v(t)$	40	32	23	12	0

- a. [2 points] Estimate the car's acceleration 0.25 seconds after the driver hits the brakes. *Remember to show your work and include units.*

Answer: _____

- b. [3 points] Based on the information in the table above, does the car first stop before, after, or at the stop sign? Or, is there not enough information to make this determination? Briefly explain your reasoning.

Answer: (Circle one choice.)

Before the sign After the sign At the sign Not enough info

Reasoning:

- c. [3 points] How often would speedometer readings need to be taken so that the resulting left-hand Riemann sum approximates the actual distance traveled between $t = 0$ and $t = 2$ seconds to within 1 foot?

Answer: Readings would need to be taken once every _____ seconds.