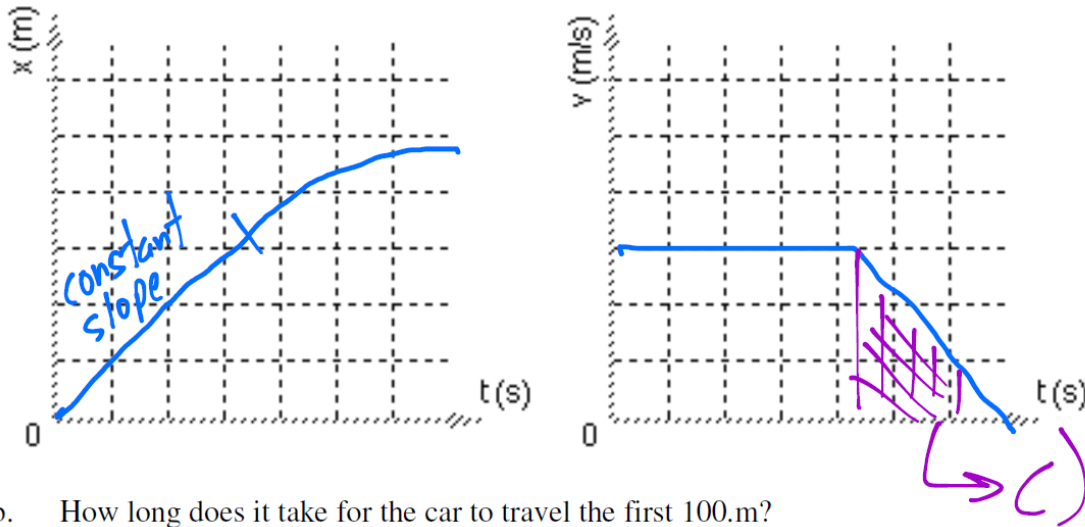


2. A stunt car driver testing the use of air bags drives a car at a constant speed of 25 m/s for a total of 100. m. He applies his brake and accelerates uniformly to a stop just as he reaches a wall 50. m away.

- a. Sketch qualitative position vs. time and velocity vs time graphs.



- b. How long does it take for the car to travel the first 100.m?

$$\Delta x = vt$$

$$100 = 25t$$

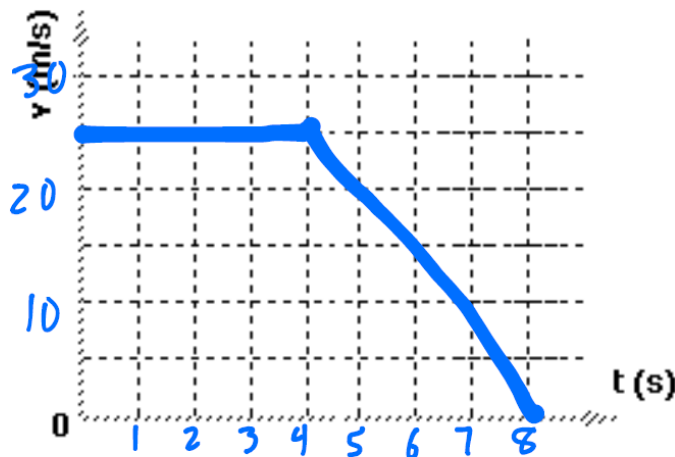
$$t = 4s$$

- c. Remember that the area under a velocity vs time graph equals the displacement of the car. How long must the brakes be applied for the car to come to a stop in 50 m?

$$\Delta x = \frac{1}{2}bh$$

$$50 = \frac{1}{2}(b)(25) = 4s$$

- d. Now that you know the total time of travel, sketch a **quantitative** velocity vs time graph.



- e. What is the magnitude of the acceleration of the car? How do you know?

$$acc = slope = \frac{rise}{run} = \frac{0 - 25}{4} = -6.25 m/s^2$$