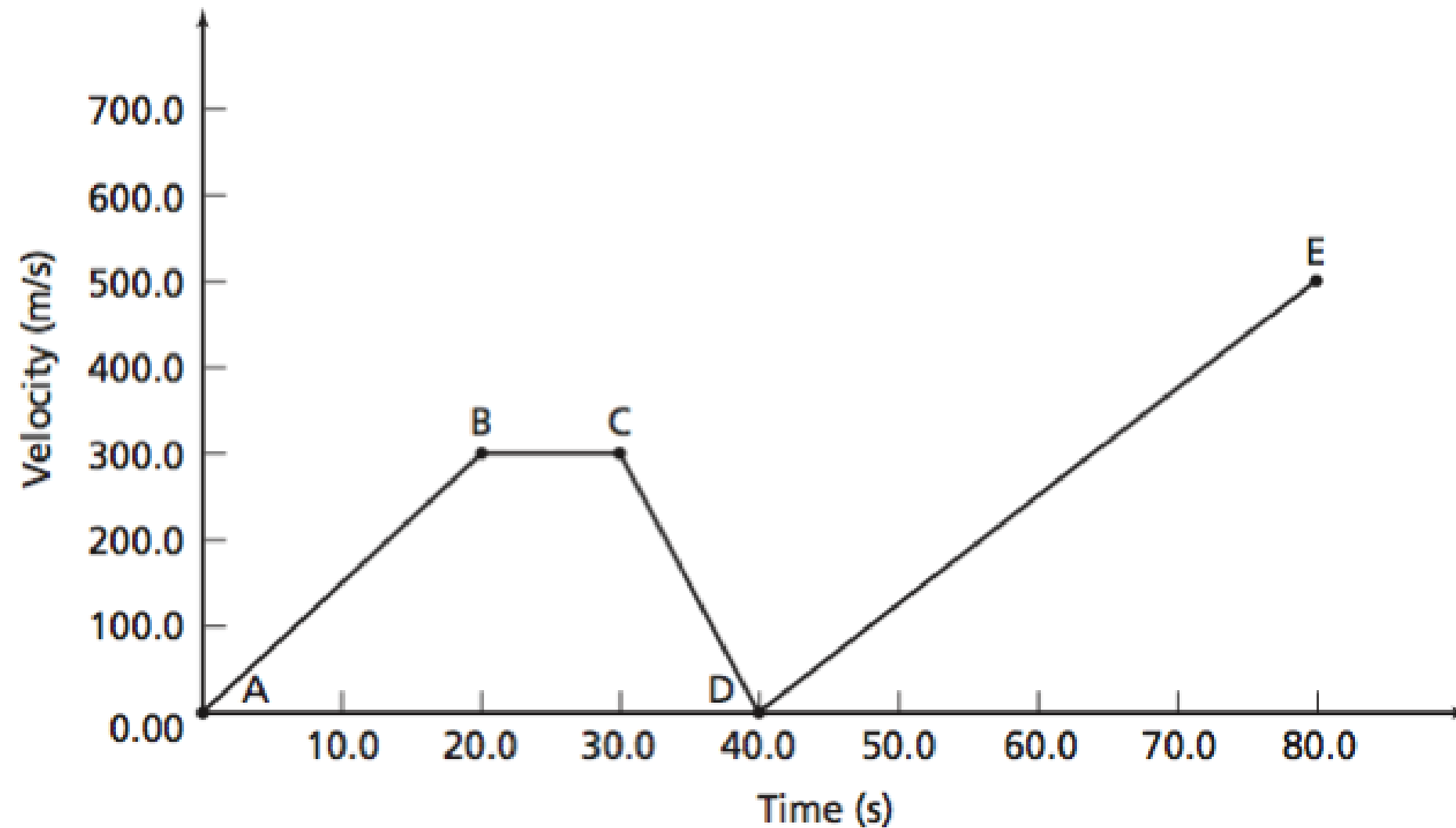
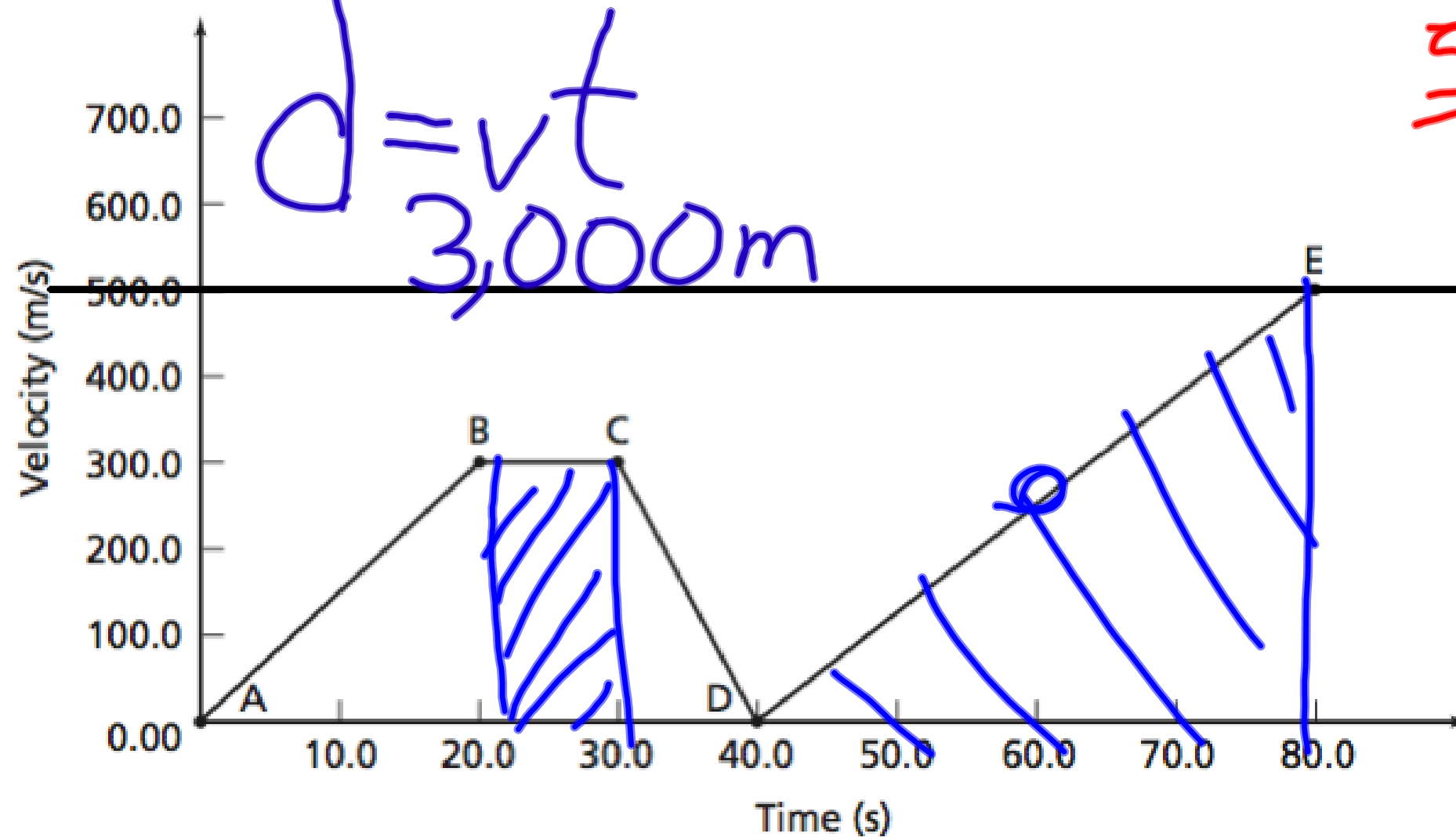


1. Use the velocity-time graph below to calculate the velocity of the object whose motion is plotted on the graph.
- a. What is the acceleration between the points on the graph labeled A and B?
 - b. What is the acceleration between the points on the graph labeled B and C?
 - c. What is the acceleration between the points on the graph labeled D and E?
 - d. What is the total distance that the object travels between points B and C?



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- 11.** A sky diver jumps from an airplane 1000.0 m above the ground. He waits for 8.0 s and then opens his parachute. How far above the ground is the sky diver when he opens his parachute?

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$$y_f = y_i + v_i t + \frac{1}{2} a t^2$$

$$y_f = 1000 + 0 + \frac{1}{2}(-9.8)8^2$$

$$686 \text{ m}$$

$$y_i = 1000 \text{ m}$$

$$t = 8 \text{ s}$$

$$a = -9.8 \text{ m/s}^2$$

$$y_f = ?$$

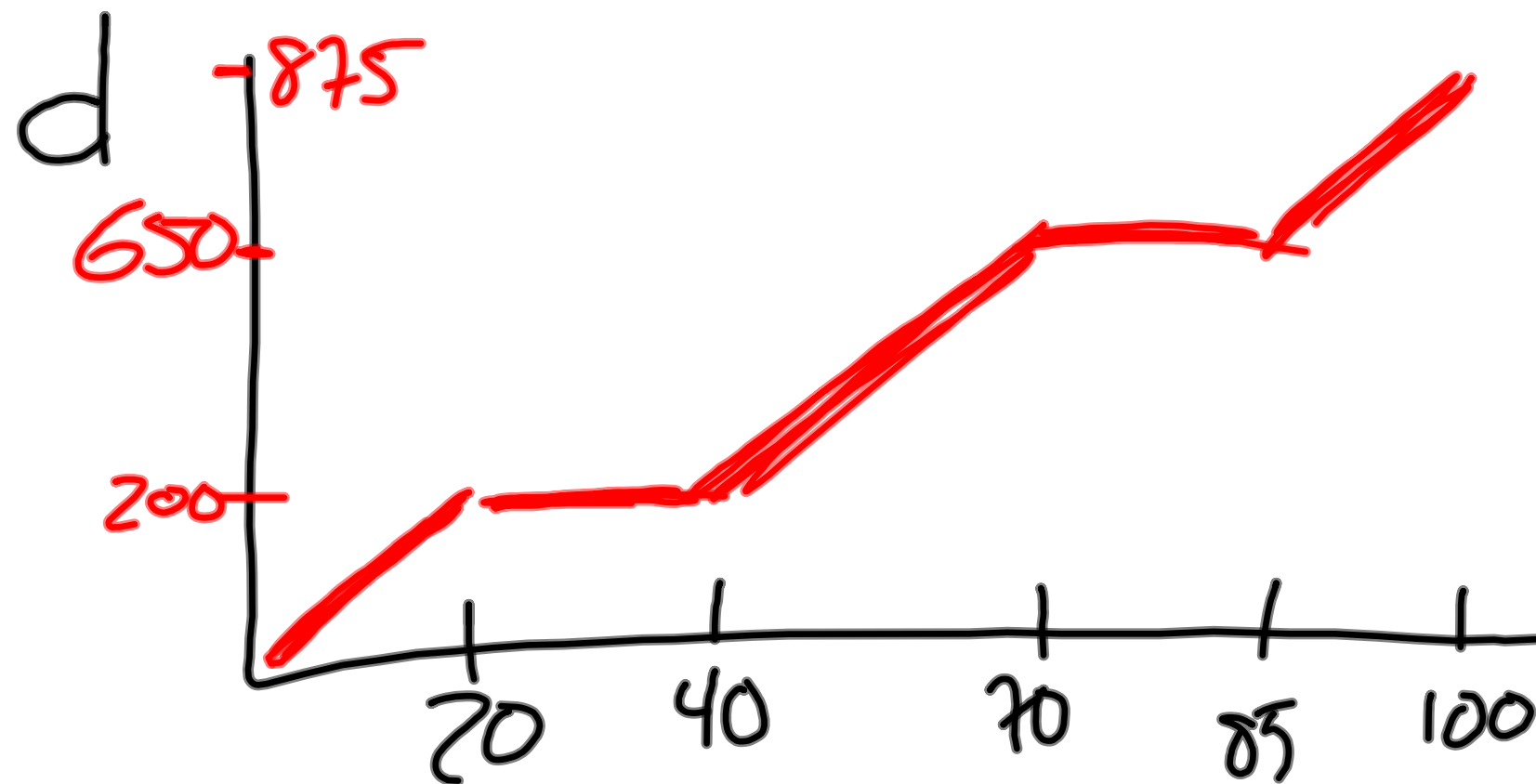
$$v_i = 0$$

- 10.** A bus travels on a northbound street for 20.0 s at a constant velocity of 10.0 m/s. After stopping for 20.0 s, it travels at a constant velocity of 15.0 m/s for 30.0 s to the next stop, where it remains for 15.0 s. For the next 15.0 s, the bus continues north at 15.0 m/s.
- a.** Construct a $d-t$ graph of the motion of the bus.
 - b.** What is the total distance traveled?
 - c.** What is the average velocity of the bus for this period?

10. A bus travels on a northbound street for 20.0 s at a constant velocity of 10.0 m/s. After stopping for 20.0 s, it travels at a constant velocity of 15.0 m/s for 30.0 s to the next stop, where it remains for 15.0 s. For the next 15.0 s, the bus continues north at 15.0 m/s.

- Construct a $d-t$ graph of the motion of the bus.
- What is the total distance traveled?
- What is the average velocity of the bus for this period?

$$D = 20 \cdot 10 \\ = 200 \text{ m}$$



6. If runner A is running at 7.50 m/s and runner B is running at 7.90 m/s , how long will it take runner B to catch runner A if runner A has a 55.0-m head start?

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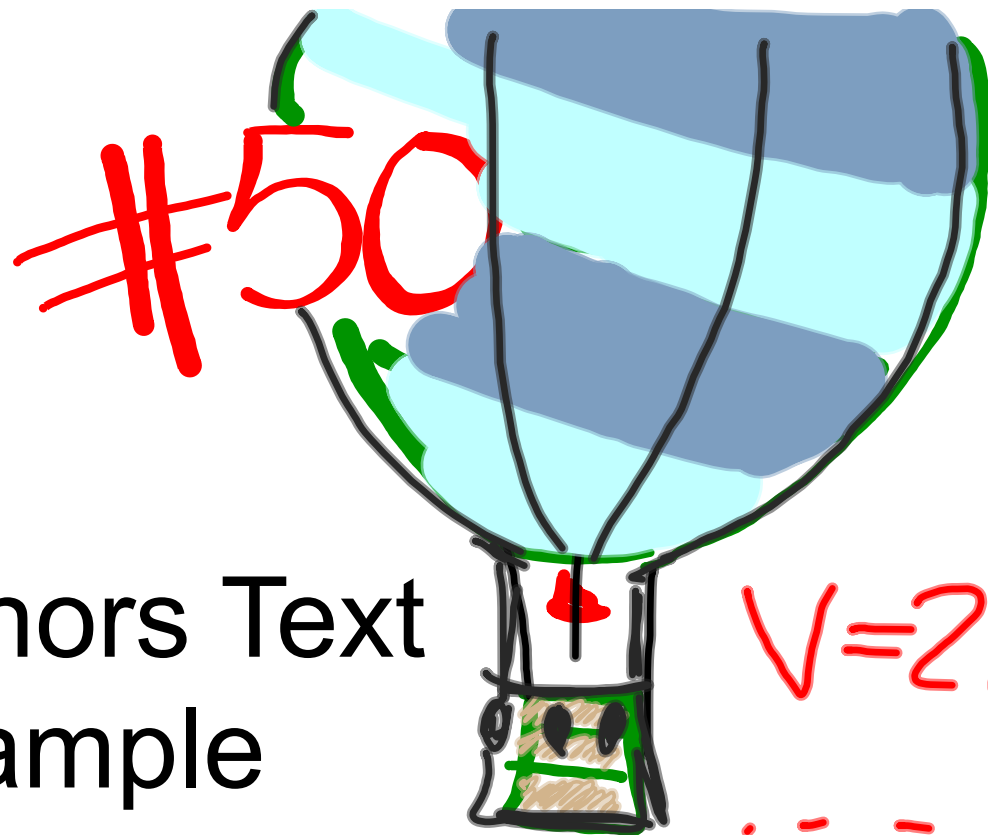
A  $V_A = 7.5$
55m

$$X = 55 + 7.5t + 0$$

B  $V_B = 7.9$
0m

$$X = 0 + 7.9(t) + 0$$

Honors Text
Example



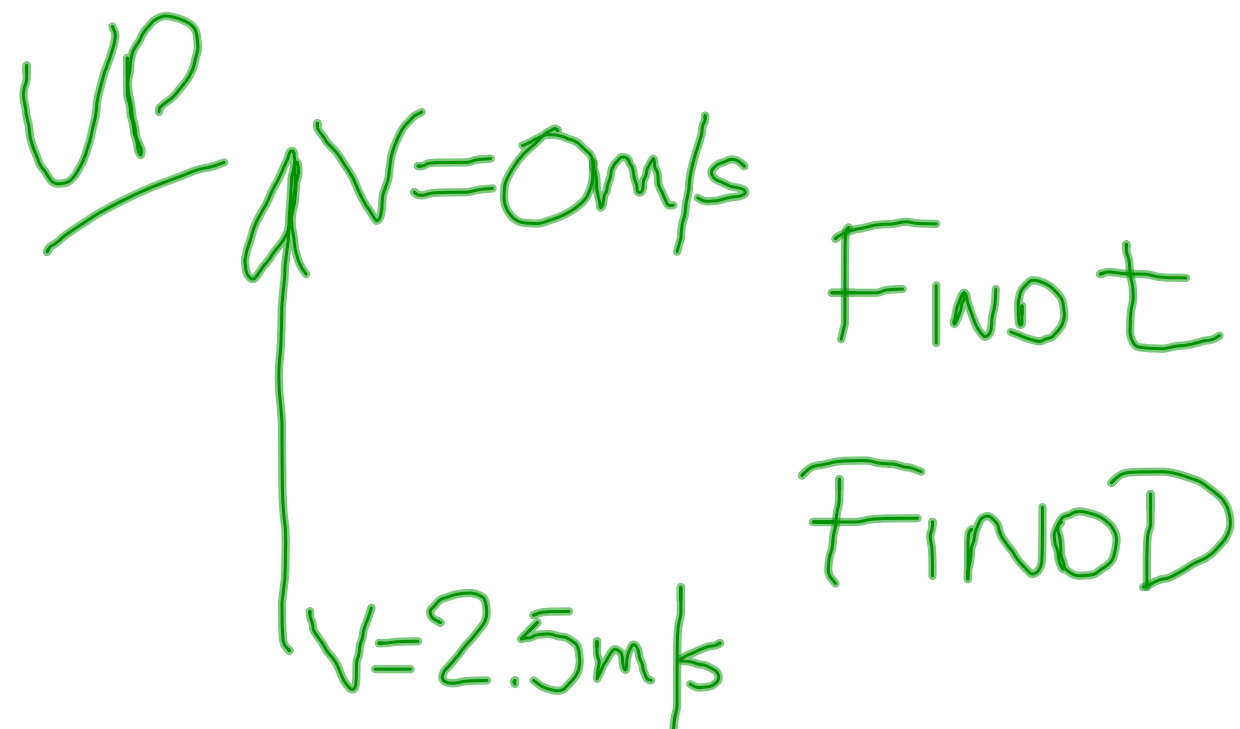
$$V = 2.5 \text{ m/s}$$

$$a = -9.8 \text{ m/s}^2$$

$$y_i = 3 \text{ m}$$

$$y_f = 0 \text{ m}$$

$$y = y_i + vt + \frac{1}{2}at^2$$
$$0 = 3 + (2.5)t + \frac{1}{2}(-9.8)t^2$$



$$t \Rightarrow 0 = 2.5 + (-9.8)t$$

$$D = 0^2 = 2.5^2 + 2(-9.8)D$$

Down $y = y_0 + vt + \frac{1}{2}at^2$

$t \Rightarrow 0 = (3 + D) + 0 + \frac{1}{2}(-9.8)t^2$