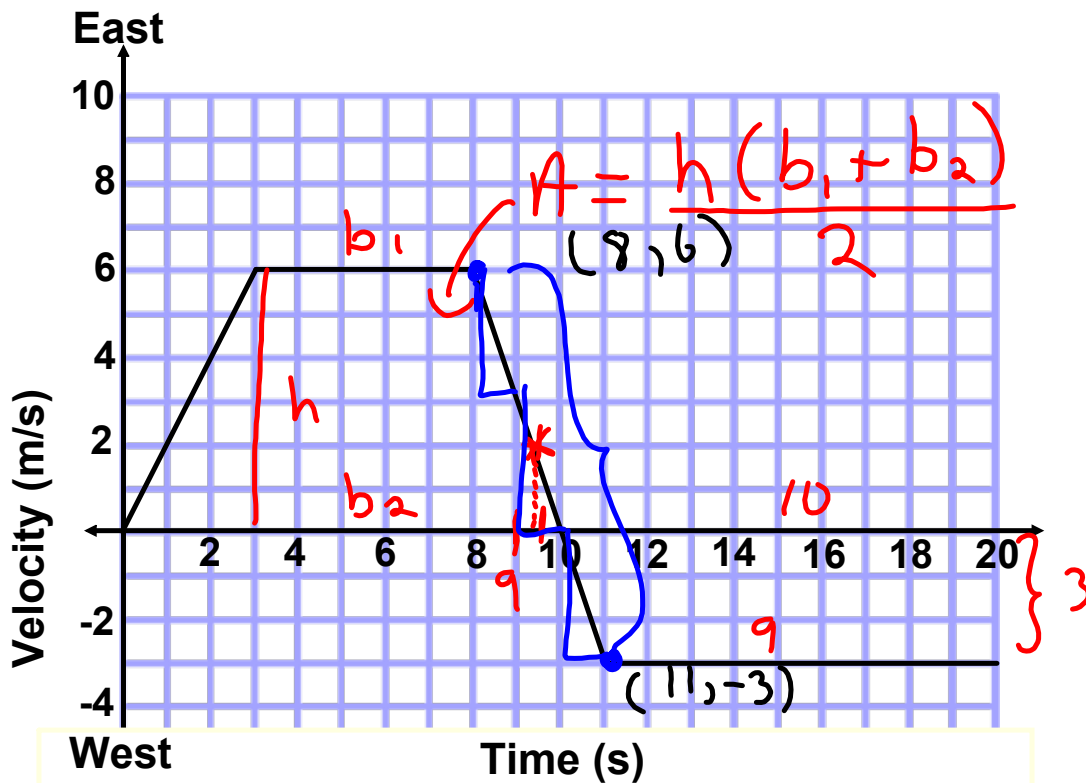


Velocity - Time Analysis Questions: Guided Practice



Quantitative Analysis (calculations)

1. Calculate the initial acceleration.
2. Calculate the distance traveled during the first 6 seconds.
3. Calculate the total distance traveled east.
4. Calculate the total distance traveled west.
5. Calculate the position at the 20 s mark.
6. Calculate the average velocity and speed for the 20 s.
7. Calculate the acceleration at the 9.31 s mark.

$$1. \vec{a} = \text{slope} \\ = \frac{6-0}{3-0} = \boxed{2 \text{ m/s}^2}$$

$$3. d_{\text{East}} = \text{Area of Top} \\ = \frac{h(b_1 + b_2)}{2} = \frac{6(5+10)}{2} \\ = \boxed{45 \text{ m}}$$

$$4. d_{\text{West}} = \text{Bottom Area} \\ = \frac{h(b_1 + b_2)}{2} = \frac{3(10+9)}{2} = \underline{\underline{28.5 \text{ m}}}$$

$$5. \vec{d}_f = ? \text{ @ } 20 \text{ s mark}$$

$$d_f = \text{Top} - \text{Bottom} \\ = 45 - 28.5 = \boxed{16.5 \text{ m}}$$

$$6. \vec{V}_{\text{avg}} = \frac{\vec{d}}{t} = \frac{16.5}{20} = \boxed{0.83 \text{ m/s}}$$

$\downarrow d_f - d_0$
 $16.5 - 0 = 16.5$

$$V_{\text{sp}} = \frac{d}{t} = \frac{45 + 28.5}{20} = \frac{73.5}{20} \\ = \boxed{3.68 \text{ m/s}}$$

$$7. \vec{a} = \text{slope} \\ = \frac{-3-6}{11-8} = \frac{-9}{3} = \boxed{-3 \text{ m/s}^2}$$

Attachments

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