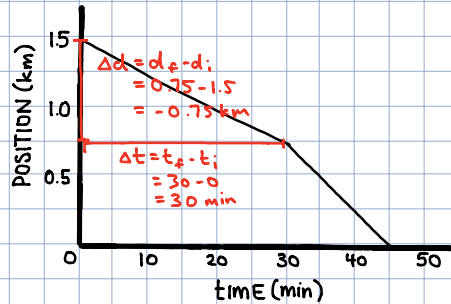


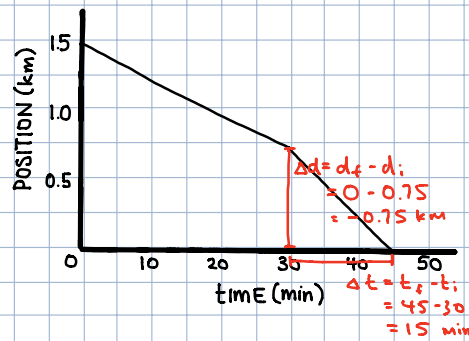
# GRAPHS OF MOTION - SOLUTIONS

1. a)



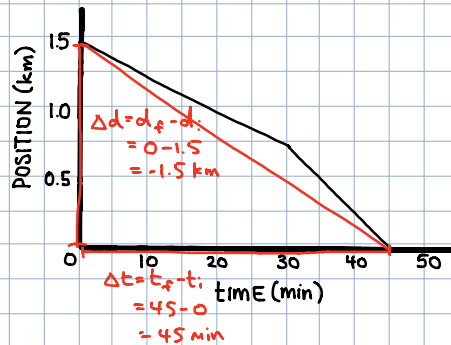
$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{-0.75}{30} \\
 &= -0.025 \frac{\text{km}}{\text{min}} \\
 &= -1.5 \frac{\text{km}}{\text{h}}
 \end{aligned}$$

b)



$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{-0.75}{15} \\
 &= -0.05 \frac{\text{km}}{\text{min}} \\
 &= -3 \frac{\text{km}}{\text{h}}
 \end{aligned}$$

c)



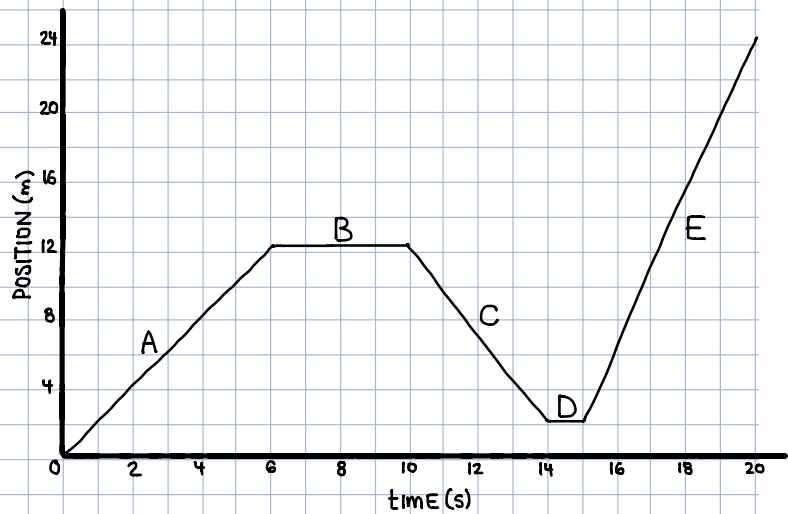
$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{-1.5}{45} \\
 &= -0.033 \frac{\text{km}}{\text{min}} \\
 &= -2 \frac{\text{km}}{\text{h}}
 \end{aligned}$$

2. a) **E**  
 (MAGNITUDE  
 OF SLOPE  
 IS GREATEST)

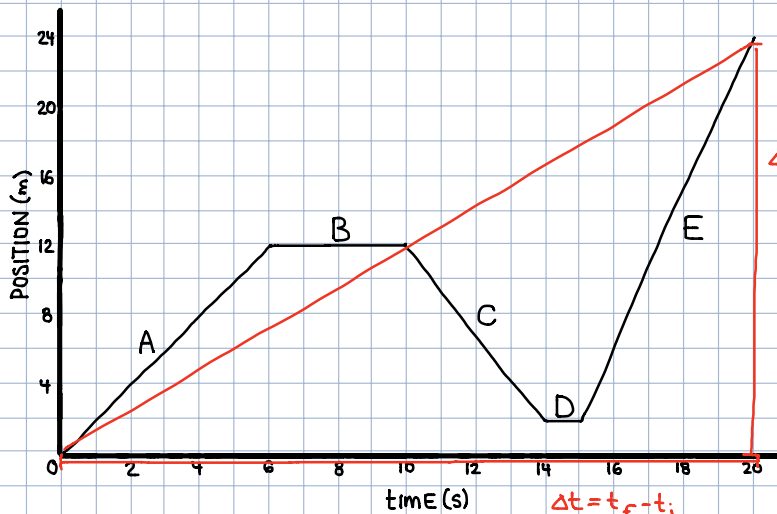
b) **A, E**  
 (SLOPE IS  
 POSITIVE)

c) **C** (SLOPE IS NEGATIVE)

d) **B, D** (SLOPE IS ZERO)



e)

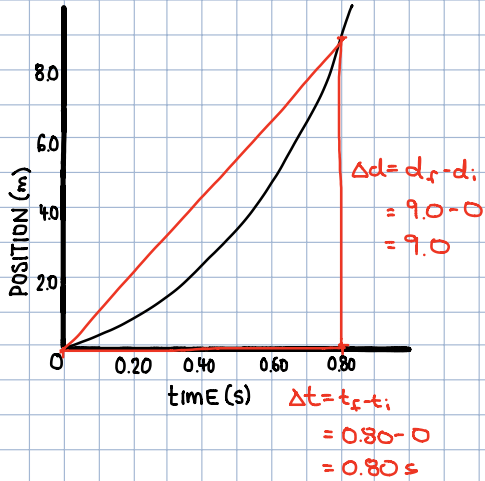


$$\begin{aligned} \Delta d &= d_f - d_i \\ &= 24 - 0 \\ &= 24 \text{ m} \end{aligned}$$

$$\begin{aligned} \Delta t &= t_f - t_i \\ &= 20 - 0 \\ &= 20 \text{ s} \end{aligned}$$

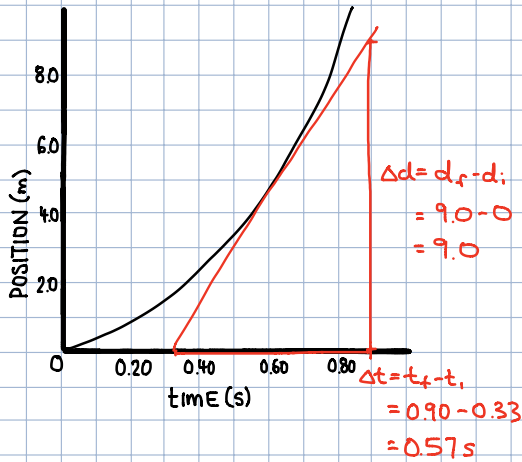
$$\begin{aligned} v &= \text{slope} \\ &= \frac{\Delta d}{\Delta t} \\ &= \frac{24}{20} \\ &= 1.2 \frac{\text{m}}{\text{s}} \end{aligned}$$

3 a)



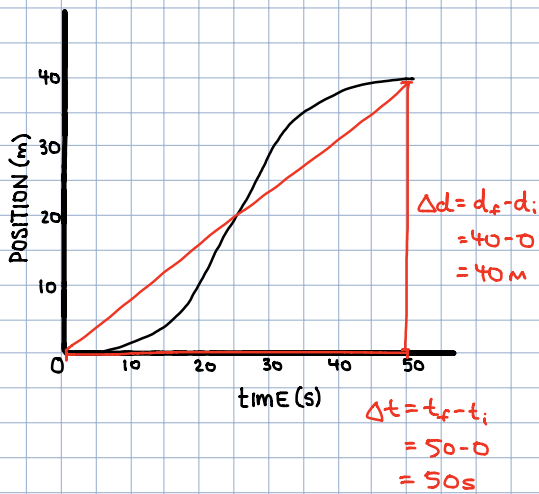
$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{9.0}{0.80} \\
 &= 11.25 \frac{\text{m}}{\text{s}}
 \end{aligned}$$

b)



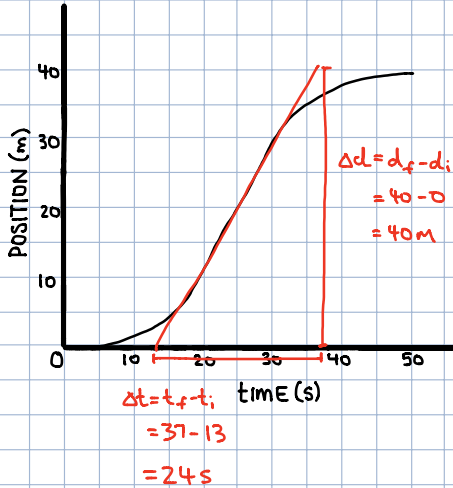
$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{9.0}{0.57} \\
 &= 15.8 \frac{\text{m}}{\text{s}}
 \end{aligned}$$

4. a)



$$\begin{aligned}
 v &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{40}{50} \\
 &= 0.8 \frac{\text{m}}{\text{s}}
 \end{aligned}$$

b)

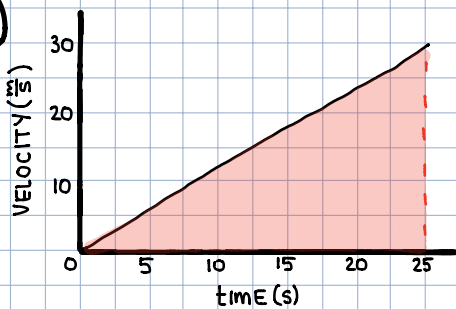


$$\begin{aligned}
 V &= \text{SLOPE} \\
 &= \frac{\Delta d}{\Delta t} \\
 &= \frac{40}{24} \\
 &= 1.67 \frac{\text{m}}{\text{s}}
 \end{aligned}$$

c) BETWEEN 0 AND 25s (SLOPE IS INCREASING)

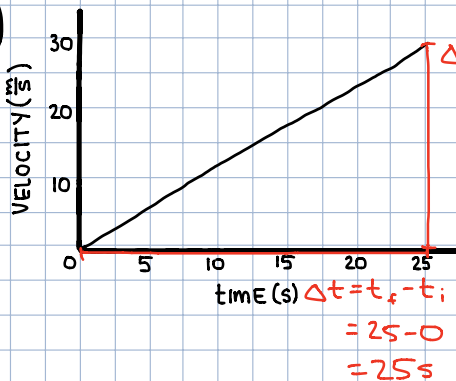
d) BETWEEN 25s AND 50s (SLOPE IS DECREASING)

5. a)



$$\begin{aligned}
 d &= \text{AREA} \\
 &= \frac{1}{2} (25)(30) \\
 &= 375 \text{ m}
 \end{aligned}$$

b)



$$\begin{aligned}
 a &= \text{SLOPE} \\
 &= \frac{\Delta v}{\Delta t} \\
 &= \frac{30}{25} \\
 &= 1.2 \frac{\text{m}}{\text{s}^2}
 \end{aligned}$$