

2

P 34 MC 6, 11

Concept 17

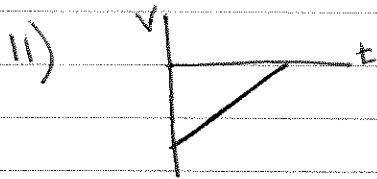
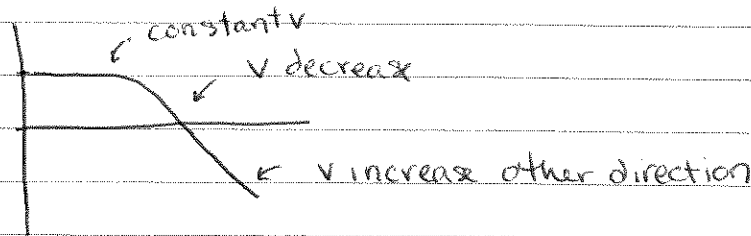
P 38 Problem 21, 60

(10pts)

Analyzer, Tutorial (online only)
Position vs Time

- Multiple Choice

6) Car moves at constant v , then slows to stop, moves in opposite



Correct signs?

$v -$ $a +$

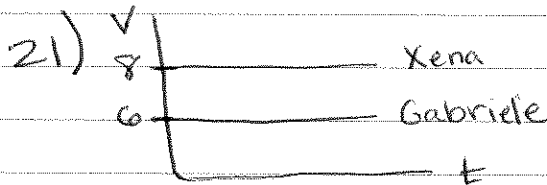
(Graph changes)

- Concept

17) cycling along 800m stretch w/ $v = 13 \text{ m/s}$
Choose right graphs



- Problem



a) x in $t = 20\text{s}$

Xena

Gabrielle

(1)

$$\begin{aligned} \text{a) } x &= vt \\ &= (8 \text{ m/s})(20\text{s}) \\ &= 160\text{m} \end{aligned}$$

$$\begin{aligned} \text{b) } x &= vt \\ &= (6 \text{ m/s})(20\text{s}) \\ &= 120\text{m} \end{aligned}$$

b) Xena $x_0 = 0\text{m}$ @ 0s

$$v_{\text{diff}} = 2 \text{ m/s}$$

c) Gabrielle $x_0 = 60\text{m}$ @ 0s

$$t = \frac{d}{v} = \frac{60\text{m}}{2\text{m/s}}$$

$$= 30\text{s}$$

Time to catch?

(1)

$$\text{d) c) } x(t) = 60 - 2t$$

②

60) $V_1 = 30 \text{ m/s}$ same spot $t=0$
 $V_2 = 24 \text{ m/s}$
 $a = -6 \text{ m/s}^2$

Represent mathematically

a) $V = V_0 + at$

a) Car 1 $V(t) = 30 - (6)t$

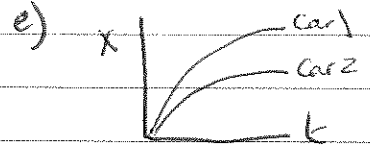
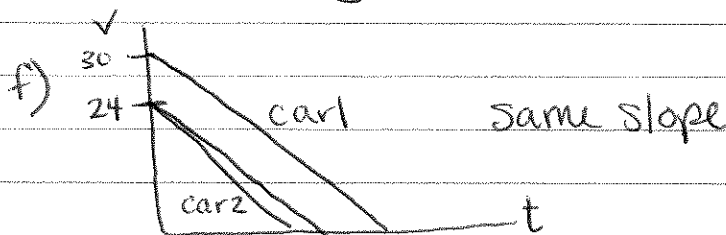
b) Car 2 $V(t) = 24 - (6)t$

$X = X_0 + V_0 t + \frac{1}{2} at^2$

c) Car 1 $X(t) = 30t - \frac{1}{2}(6)t^2$

d) Car 2 $X(t) = 24t - \frac{1}{2}(6)t^2$

b) velocity vs Time Graph (web gives X vs t also)



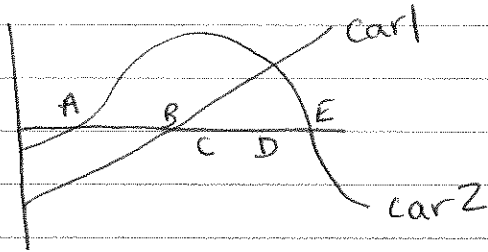
c) Where when Stop?

g) Car 1 ① $t = \frac{\Delta V}{a} = \frac{0 \text{ m/s} - 30 \text{ m/s}}{-6 \text{ m/s}^2} = 5 \text{ s}$ ② $X = V_0 t + \frac{1}{2} at^2 = (30 \text{ m/s})(5 \text{ s}) + \frac{1}{2}(-6 \text{ m/s}^2)(5 \text{ s})^2 = 75 \text{ m}$

h) Car 2 ① $t = \frac{\Delta V}{a} = \frac{0 \text{ m/s} - 24 \text{ m/s}}{-6 \text{ m/s}^2} = 4 \text{ s}$ ② $X = V_0 t + \frac{1}{2} at^2 = (24 \text{ m/s})(4 \text{ s}) + \frac{1}{2}(-6 \text{ m/s}^2)(4 \text{ s})^2 = 48 \text{ m}$

- Analyze Position vs Time

Online Tutorial



- (1) a) Pass each other? D same spot same time
- b) Same direction when pass? NO #1 forward #2 backward
- c) Car #1 stop? None no zero slope
- d) Car #2 stop? C slope is zero
- e) Nearly same vel? A slope nearly same