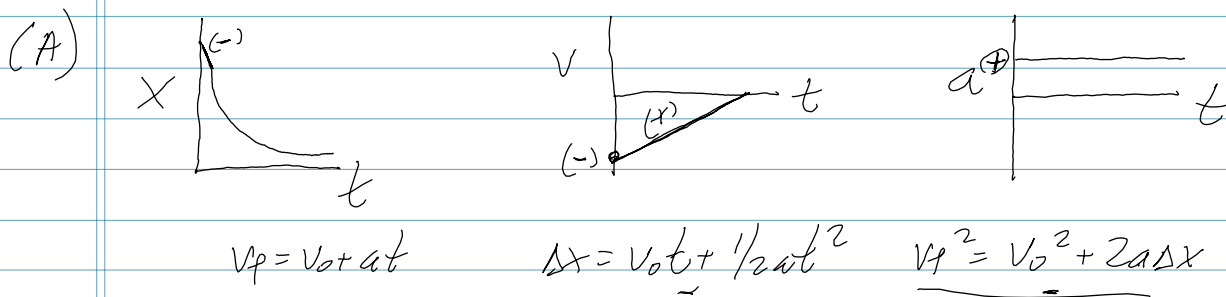


1) A car moving at 25 m/s moves toward the origin and accelerates away from the origin a  $5 \text{ m/s}^2$ . (A) make all three graphs (qualitative). (B) How long does it take the car to stop? (C) What is the velocity of the car after 2.8 seconds? (D) What is the car's  $\Delta x$  after 4.0 s? (E) Car's speed after it has moved 45 m?



(B) Towards the origin (-)  $\Rightarrow v, a, \Delta x$   
 $t = ?$   
 $v_f = 0 \text{ m/s}$        $v_f = v_0 + at$   
 $v_0 = -25 \text{ m/s}$        $0 = -25 + 5t$   
 $a = +5 \text{ m/s}^2$        $t = 5 \text{ s}$

(C)  $v_f = ?$   
 $t = 2.8 \text{ s}$   
 $v_0 = -25 \text{ m/s}$        $v_f = v_0 + at$   
 $a = +5 \text{ m/s}^2$        $v_f = -25 + 5(2.8)$   
 $v_f = -11 \text{ m/s}$

(D)  $\Delta x = ?$   
 $t = 4 \text{ s}$   
 $v_0 = -25 \text{ m/s}$        $\Delta x = v_0 t + \frac{1}{2} at^2$   
 $a = +5 \text{ m/s}^2$        $\Delta x = -25(4) + \frac{1}{2}(+5)(4)^2$   
 $\Delta x = -100 + 40$   
 $\Delta x = -60 \text{ m}$

(E) Towards the origin (+)  
 $v_0 = +25 \text{ m/s}$        $v_f^2 = v_0^2 + 2(a)(\Delta x)$   
 $a = -5 \text{ m/s}^2$        $v_f^2 = -25^2 + 2(+5)(45)$   
 $v_f = ?$        $\rightarrow v_f^2 = 625 - 450$   
 $\Delta x = +45 \text{ m}$        $\rightarrow v_f^2 = 175$   
 $v_f = \pm 13.23 \text{ m/s}$  \*