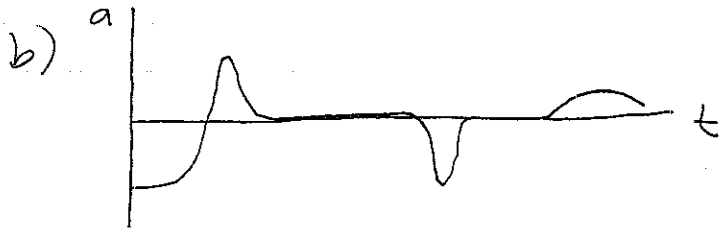
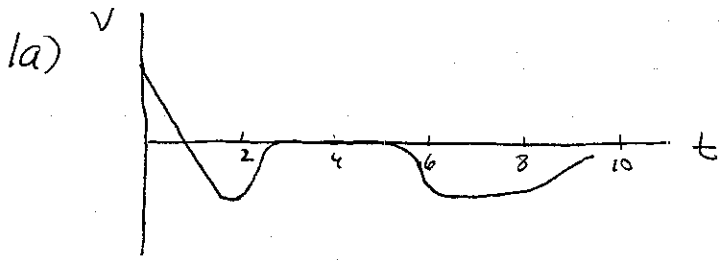


# Exam 1, Physics 200B, fall 2008



- c) 0 → 2s: move quickly in + direction, slow, turn around, speed up in - dir  
 3 → 5s: stand still  
 6 → 8s: move in - direction with constant speed  
 d) at about 1s

2. a)  $v_f^2 = v_i^2 + 2a\Delta x$ ;  $\Delta x = 144 \text{ ft} = 43.89 \text{ m} \rightarrow v_f = 29.3 \text{ m/s}$   
 b)  $v_f^2 = v_i^2 + 2a\Delta x$ ;  $\Delta x = 18 \text{ in} = 0.457 \text{ m}$ ,  $v_i = 29.3 \text{ m/s} \rightarrow |a| = |-940 \text{ m/s}^2|$   
 c)  $940/9.8 = 96$

3. a)  $x_f - x_i = v_{xi}t$ ;  $t$  from  $y_f - y_i = v_{yi}t + \frac{1}{2}a_y t^2$   
 $y_i = 1.75 \text{ m}$ ,  $y_f = 1.25 \text{ m}$ ,  $v_{yi} = 12 \sin 18 \rightarrow t = 0.874 \text{ s}$   
 so  $\Delta x = (12 \cos 18)(0.874) = 9.97 \text{ m}$   
 b)  $v_{xf} = v_{xi} = 11.4 \text{ m/s}$ ;  $v_{yf} = v_{yi} + a_y t = -4.86 \text{ m/s}$   
 or  $12.4 \text{ m/s}$  at  $23.1^\circ$  below horizontal   
 c)  $a_x = 0$ ,  $a_y = -9.8 \text{ m/s}^2$  (both constant)  
 d)  $v_x = 11.4 \text{ m/s}$ ;  $v_y = 0$  at highest point

- 4.1.  $v \uparrow \text{ (a)}$  acceleration due to direction of  $\vec{v}$  changing d)  $\downarrow \text{ (a)}$  speeding up  
 $\vec{a} = \text{toward center/forward}$

2 slowing down

- 3 a)   
 b)  $\vec{D} = -2.8\hat{c} + 2.5\hat{j} \text{ N}$

4.  $|\vec{a}| = \left| \frac{\Delta \vec{v}}{\Delta t} \right| = \left| \frac{5 - (-5)}{0.15} \right| = +67 \text{ m/s}^2$

5.  $10^5$