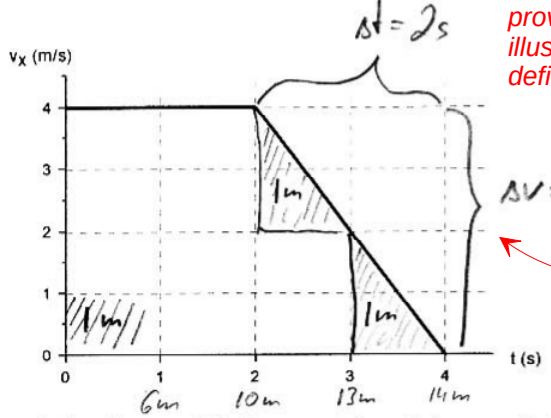
PHYS 131 Mechanics and Heat 2. quiz - September 19, 2008

Name: Answer Key

The figure to the right shows the velocity versus time graph for a particle moving along the x-axis. Its initial position is $x_0 = 2.0$ m and $t_0 = 0$ s.



use the provided graph to illustrate a point, define variables etc.

1. What is the particles position, velocity and acceleration at t = 1.0 s ?

2. What are the particle's position, velocity and acceleration at t = 3.0 s?

3. **Carefully** sketch the position versus time graph for the particle between 0 and 4 seconds ?

Make sure to show your work !

tell me what you plan to do:

(1) displacement / Δx = area under v(t) curve

→ $\Delta x\,(0\text{–}1s) = 4m \rightarrow x(1s) = x_i + \Delta x$

$x(1s) = 2m + 4m = \underline{6m}$

$v(1s) = \underline{4\ m/s}$ $a(1s) = \underline{0\ m/s^2}$

don't forget the units !

(2) some reasoning:

$\Delta x_1\,(0\text{–}2s) = 8m$

$\Delta x_2\,(2\text{–}3s) = 3m$

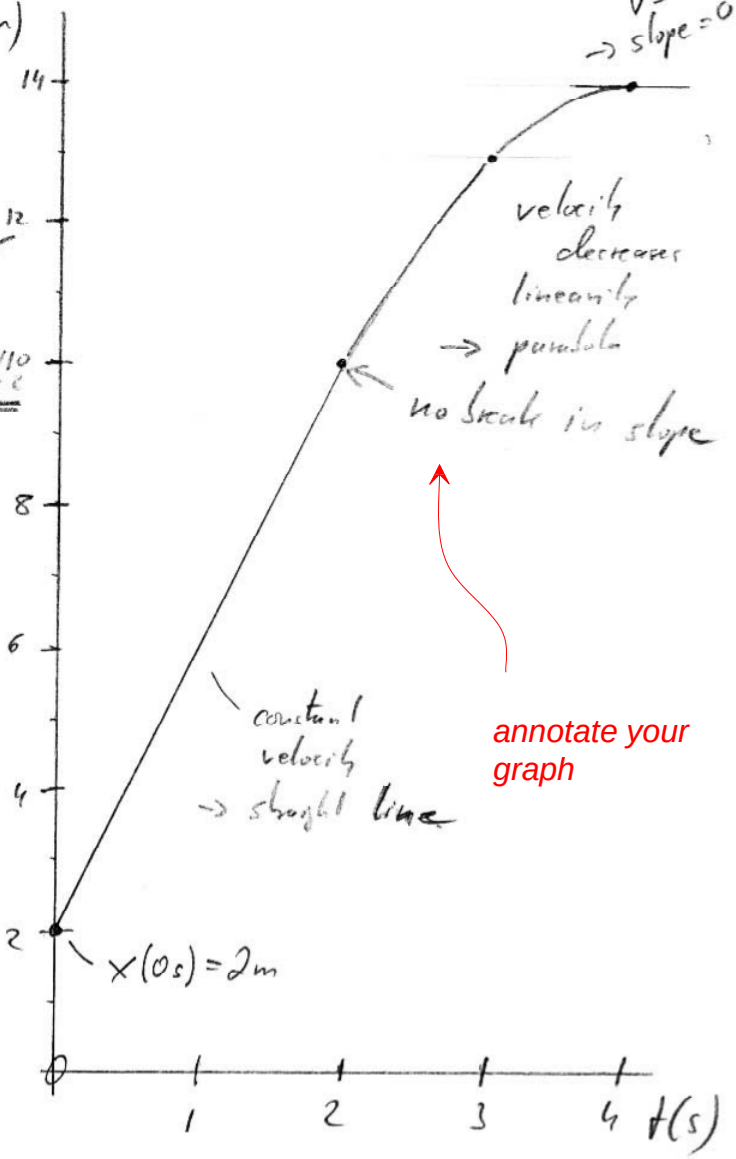
$x(3s) = x_i + \Delta x_1 + \Delta x_2$

$= 2m + 8m + 3m = \underline{13m}$

$v(3s) = 2\ m/s$

$a(3s) = \frac{\Delta v}{\Delta t} = -\frac{4}{2}\ m/s^2$

$a(3s) = -2\ m/s^2$



annotate your graph