Stuff that may help!

$$\Delta x = \left[\frac{v_{x_0} + v_x}{2} \right] \Delta t$$

$$\Delta x = v_{x_0} \Delta t + \tfrac{1}{2} a_x \Delta t^2$$

$$v_x = v_{x_0} + a_x \Delta t$$

$$v_x^2 = v_{x_0}^2 + 2 a_x \Delta x$$

$$\vec{v}_{ave} = \frac{\Delta \vec{r}}{\Delta t}$$

$$\vec{a}_{ave} = \frac{\Delta \vec{v}}{\Delta t}$$

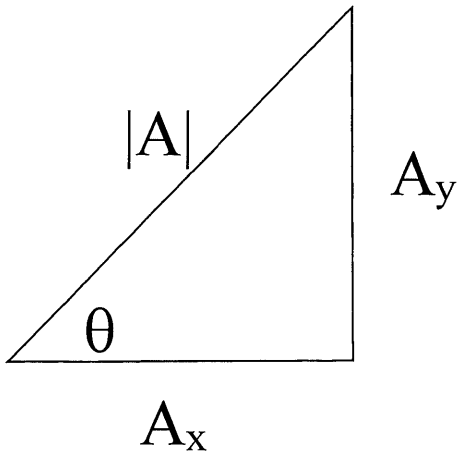
$$\Delta y = \left[\frac{v_{y_0} + v_y}{2} \right] \Delta t$$

$$\Delta y = v_{y_0} \Delta t + \tfrac{1}{2} a_y \Delta t^2$$

$$v_y = v_{y_0} + a_y \Delta t$$

$$v_y^2 = v_{y_0}^2 + 2 a_y \Delta y$$

$$g = 9.8 m/s^2$$

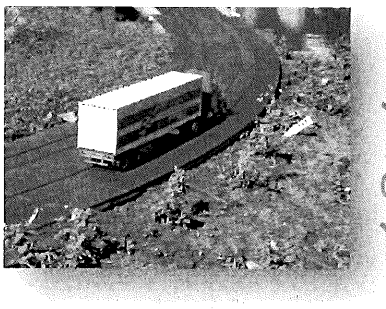


Quiz 2

PHYS 2211
Principles of Physics I
Quiz 2

Name Charles John

Show all work in the spaces provided.



① $v_{1_0} = 0$, $a_1 = 3\,m/s^2$, $v_1 = 20\,m/s$, $t_1 = ?$

② $20\,m/s = v_2$, $t_2 = 20s$, $a_2 = 0$

③ $v_{3_0} = 20\,m/s$, $t_3 = 5s$, $v_3 = 0$, $a_3 = ?$

1) A truck on a straight road starts from rest, accelerating at $3.00\,m/s^2$ until it reaches a speed of $20.00\,m/s$. Then the truck travels for $20.0\,s$ at a constant speed until the brakes are applied, stopping the truck in a uniformed manner in an additional $5.0\,s$.

a) How long is the truck in motion? (5 pts)

$v_1 = v_{1_0} + a_1 t_1$

$t_1 = \frac{v_1}{a_1} = \frac{20\,m/s}{3\,m/s^2} = 6.67s$

$t_{tot} = t_1 + t_2 + t_3$

$t_{tot} = 6.67s + 20s + 5s$

$t_{tot} = 31.67s$

b) What is the average velocity of the truck for the motion described? (5 pts)

$v_{ave} = \frac{\Delta x_{tot}}{t_{tot}} = \frac{66.73m + 400m + 50m}{31.67s} = 16.32\,m/s$

$\Delta x_1 = v_{x_0} t + \frac{1}{2} a_1 t^2$

$\Delta x_1 = \frac{1}{2}(3\,m/s^2)(6.67s)^2$

$\Delta x_1 = 66.73m$

$\Delta x_2 = v_2 t_2$

$\Delta x_2 = (20\,m/s)(20s)$

$\Delta x_2 = 400m$

$\Delta x_3 = \left(\frac{v_{3_0} + v_3}{2}\right) t$

$\Delta x_3 = \left(\frac{20\,m/s + 0}{2}\right)(5s)$

$\Delta x_3 = 50m$

Stuff that may help!

$$\Delta x = \left[\frac{v_{x_0} + v_x}{2} \right] \Delta t$$

$$\Delta x = v_{x_0} \Delta t + \tfrac{1}{2} a_x \Delta t^2$$

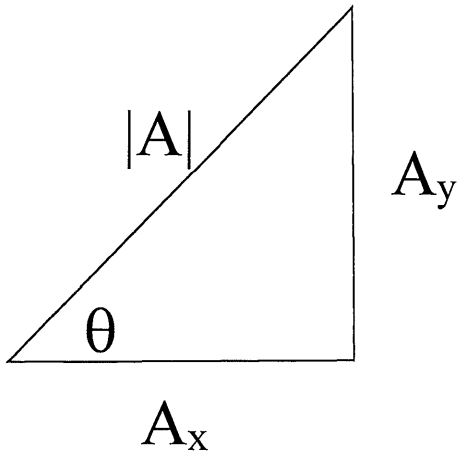
$$v_x = v_{x_0} + a_x \Delta t$$

$$v_x^2 = v_{x_0}^2 + 2 a_x \Delta x$$

$$g = 9.8\, m/s^2$$

$$\vec{v}_{ave} = \frac{\Delta \vec{r}}{\Delta t}$$

$$\vec{a}_{ave} = \frac{\Delta \vec{v}}{\Delta t}$$



$$\sum F_x = ma_x$$

$$\sum F_y = ma_y$$

$$W = mg$$

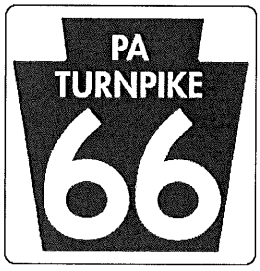
$$1m = 3.28\, ft$$

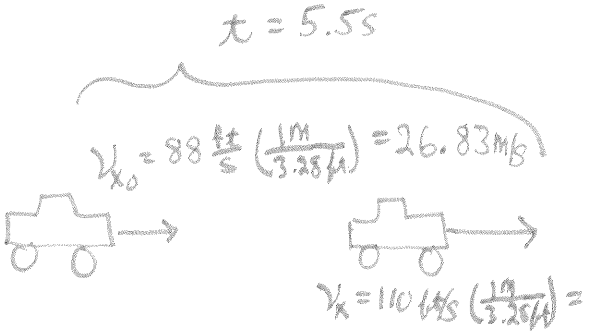
Quiz 2

PHYS 1111
Introductory Physics I
Quiz 2

Name Charles Jahr

Show all work in the spaces provided





1) A car driving on the turnpike accelerates uniformly in a straight line from 88 ft/s to 110 ft/s in 33.54 m/s
5.5 s:
   a) What is the acceleration in m/s^2? (5 pts)

$$a_x = \frac{\Delta v}{\Delta t} = \frac{v_x - v_{x_0}}{t} = \frac{33.54 m/s - 26.83 m/s}{5.5 s} = 1.22 m/s^2$$

   b) What is the distance in meters, the car travels in that time. (5 pts)

$$\Delta x = v_{x_0} t + \frac{1}{2} a_x t^2$$

$$\Delta x = (26.83 m/s)(5.5 s) + \frac{1}{2}(1.22 m/s^2)(5.5 s)^2$$

$$147.565 m \qquad 18.4525 m$$

$$\Delta x = 166.02 m$$