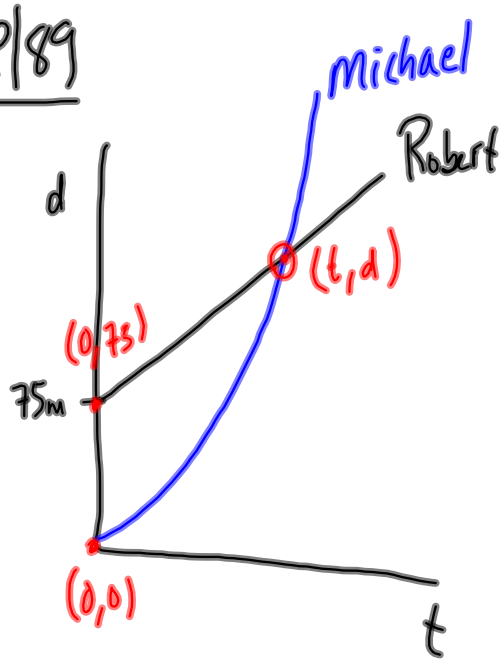
PP/89

5.



Robert - constant velocity of 4.2m/s

$v = \frac{\Delta d}{\Delta t}$

$\Delta d = v\Delta t$

$d - 75 = 4.2(t - 0)$

$\boxed{d = 4.2t + 75}$

$(y = mx + b)$

Using Substitution:

$4.2t + 75 = 3.8t + 0.075t^2$

$0 = 0.075t^2 - 0.4t - 75$

$a \quad b \quad c$

$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Michael - constant acceleration of $0.15 m/s^2$ with $v_1 = 3.8$ m/s

$\Delta d = v_1 \Delta t + \frac{1}{2} a(\Delta t)^2$

$d - 0 = 3.8t + \frac{1}{2}(0.15)t^2$

$\boxed{d = 3.8t + 0.075t^2}$

Solve for t, then sub in and solve for d.

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7. $v_1 = 20.0\ m/s$

$\Delta d = 1.50 \times 10^2\ m$

$\Delta t = 10.0\ s$

$v_2 = ?$

$$v_{ave} = \frac{\Delta d}{\Delta t}$$

$$\frac{v_1 + v_2}{2} = \frac{\Delta d}{\Delta t}$$

$$v_1 + v_2 = \frac{2\Delta d}{\Delta t}$$

$$v_2 = \frac{2\Delta d}{\Delta t} - v_1$$

$$v_2 = \frac{2(1.50 \times 10^2\ m)}{10.0\ s} - 20.0\ m/s$$

$$v_2 = 30.0\ m/s - 20.0\ m/s$$

$$\boxed{v_2 = 10.0\ m/s}$$

TODO

- Calculator Pad:(all)
- Review (p116/11-17 and p118/1-16)
- Review (p120/38, 39, 42-45)

One More Example

Popper => pops 2.0m in the air

What is the velocity when it leaves the table?

$v_1 = ?$

$v_2 = 0$

$\Delta d = 2.0\ m$

$a = -9.81\ m/s^2$

$$v_2^2 = v_1^2 + 2a\Delta d$$

$$v_1^2 = \cancel{v_2^2}^{0} - 2a\Delta d$$

$$v_1^2 = -2a\Delta d$$

$$v_1^2 = -2(-9.81\ m/s^2)(2.0\ m)$$

$$v_1^2 = 39.24\ \frac{m^2}{s^2}$$

$$v_1 = \pm 6.3\ m/s \quad \leftarrow up$$

$$v_1 = +6.3\ m/s$$

$$\vec{v}_1 = 6.3\ m/s\ [up]$$