toss a ball up

up (const. acc) Down (free fall)

$v_{i,up} = +$

$a = -9.8 \frac{m}{s^2}$

$v_{f,up} = 0 \frac{m}{s}$

$v_{i,down} = 0 \frac{m}{s}$

$a = -9.8 \frac{m}{s^2}$

$v_f = -v_{i,up}$ (when reaches starting pt)

$y_f = \frac{1}{2} a t^2 + v_f t + y_i$

$t_{up} = t_{Down}$

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$t = 0.6\,s$

A B

$v_{iA} = 0 \frac{m}{s}$ (free fall)

$\Delta y = v_i t + \frac{1}{2} a t^2$

$y_f - y_i = v_i t + \frac{1}{2} a t^2$

$\rightarrow y_f = \frac{1}{2} a t^2 + v_i t + y_i$

$y_{fA} = \frac{1}{2}(-9.8 \frac{m}{s^2}) t^2 + 0(\Delta t) + 15\,m$

15 m

$v_{iB} = 25 \frac{m}{s}$ (const acc)

ignore air resistance.

When will they meet? Δt

$y_{fB} = \frac{1}{2}(-9.8 \frac{m}{s^2}) t^2 + 25 \frac{m}{s}(\Delta t) + 0$

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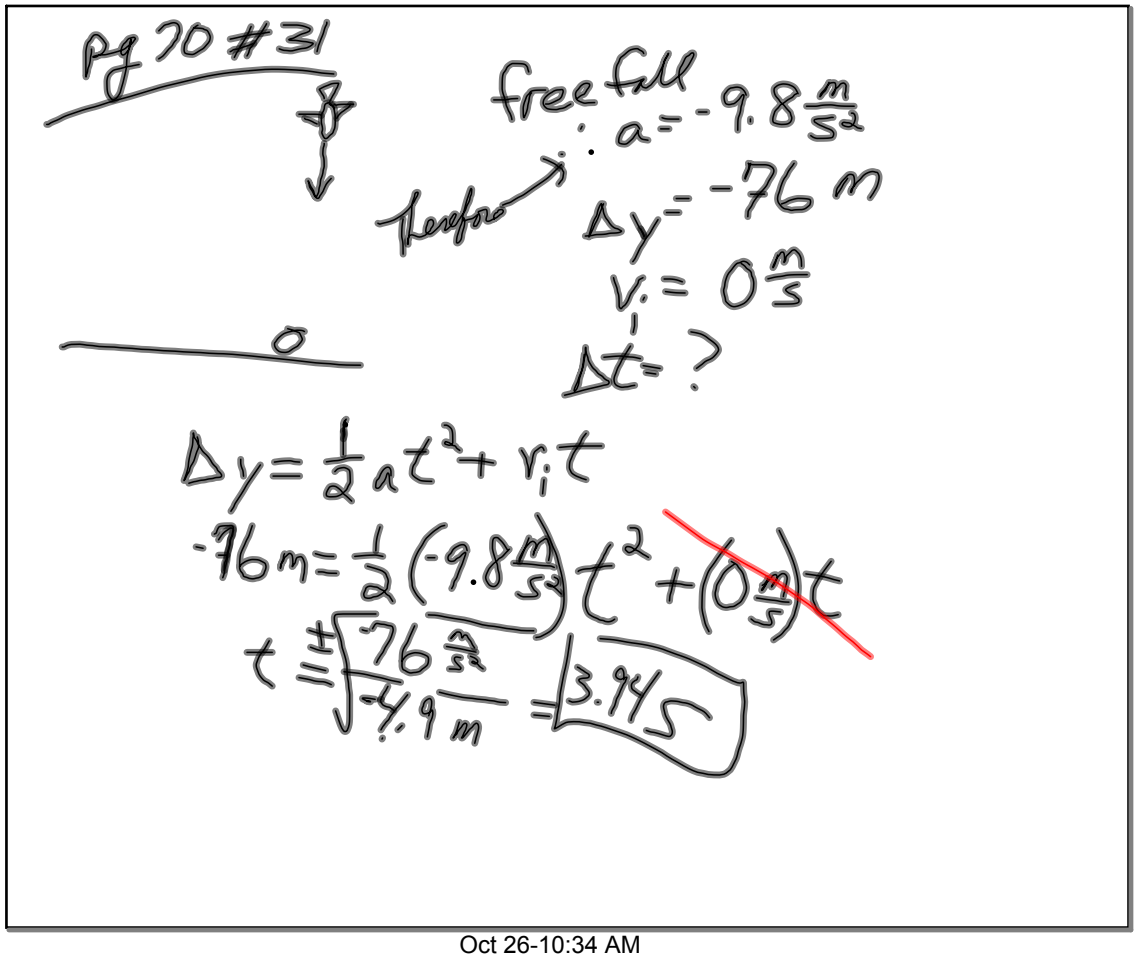

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