Answer on Question #72506-Physics-Other

A ball is thrown upward from the top of a 50 m high building with an initial velocity of 20 m/s at the same instant, another ball is thrown upward with an initial velocity of 30 m/s from the ground. Determine

a) When and where they will meet each other

b) The velocity of each ball at that instant

Hint: s=y-yo

Note: Set the ground as a reference point for Ball A and Ball B. The final position of ball A is equal to the final position of ball B. Ya = Yb

Solution

a)

$$y_a = 50 + 20t - \frac{10t^2}{2}$$
$$y_b = 30t - \frac{10t^2}{2}$$
$$50 + 20t - \frac{10t^2}{2} = 30t - \frac{10t^2}{2}$$
$$10t = 50$$
$$t = \frac{50}{10} = 5 s.$$
$$y = 30(5) - \frac{10(5)^2}{2} = 25 m.$$

b)

$$v_a = 20 - 10(5) = -30 \frac{m}{s}.$$

 $v_a = 30 - 10(5) = -20 \frac{m}{s}.$

The negative sign means that direction is downwards.

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