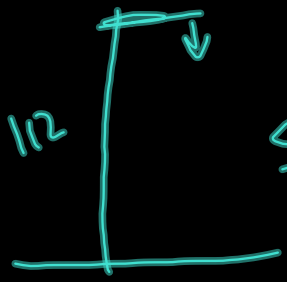
AP Calculus AB

Tuesday, October 23, 2012

Any questions about straight line motion?

6. A ball fired downward from a height of 112 feet hits the ground in 2 seconds. Find its initial velocity.



Ground → 2 sec. $v_0 = ?$

$s_0 = 112$ ft

$s(t) = -16t^2 + v_0 t + s_0$

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time → 2 sec

$s(t) = 0$

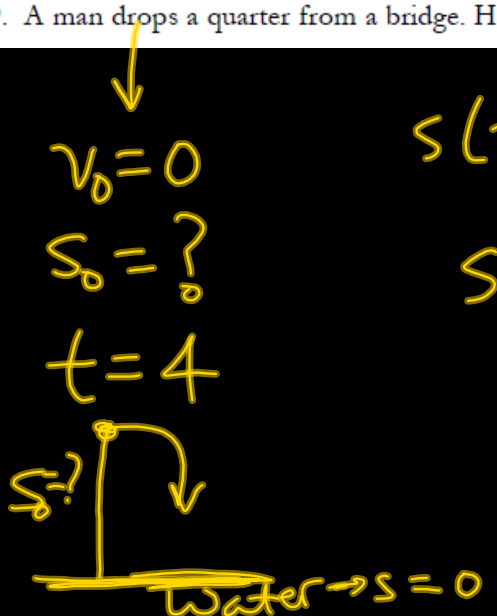
$0 = -16(2)^2 + v_0(2) + 112$

$0 = -64 + v_0(2) + 112$

$0 = 48 + 2v_0$

$v_0 = -24$ ft/sec

9. A man drops a quarter from a bridge. How high is the bridge if the quarter hits the water 4 seconds later?



$s(t) = -16t^2 + v_0 t + s_0$

$s(t) = -16t^2 + s_0$

$0 = -16(4)^2 + s_0$

$256 \text{ ft} = s_0$

The bridge is 256 ft high.