

### Question #14201

The formulas for  $S(t), v(t)$  , when object is moving with constant acceleration, are given by:

$$v=v_0+at; S=v_0t+\frac{at^2}{2}$$

. Knowing, that for  $t=9.15\text{s}$ ,  $v=52\text{ m/s}$ ,  $S=219\text{ m}$  , obtain system of

$$52=v_0+9.15\cdot a, 219=9.15\cdot v_0+a\frac{(9.15)^2}{2}$$

. Plugging the first equation, into second:  $219=(52-9.15 a)\cdot 9.15+\frac{a}{2}(9.15)^2$  , which gives  $a\approx 6.13\text{ m/s}^2$  , and using first equation,  $v_0=52\text{ m/s}-9.15\text{s}\cdot 6.13\text{ m/s}^2=-4.09\text{ m/s}$  .