Answer on Question#69846 –Physics– Mechanics – Relativity

An automobile driver puts on the brakes and decelerates from 28.0 m/s to zero in 13.0 s. What distance does the car travel?

Solution. According to the condition of problem $v_i = 28\frac{m}{s}$ – initial speed of the automobile; $v_f = 0\frac{m}{s}$ – final speed of the automobile; $t = 13s$ – time.

Using the definition of acceleration

$$a = \frac{0-28}{13} = -\frac{28}{13}\frac{m}{s^2}.$$

For the motion with constant acceleration, we use the formula

$$S = v_i t + \frac{at^2}{2}$$

Therefore

$S = 28 \cdot 13 - \frac{28 \cdot 13^2}{13 \cdot 2} = 182\text{m}.$

Answer. 182m.

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