

## Answer on Question #47470, Physics, Mechanics | Kinematics | Dynamics

A car is decelerating at  $-2 \text{ m/s}^2$  for five minutes. If initial velocity is  $72 \text{ km/h}$  then find its final velocity

### Solution:

Given:

$$a = -2 \text{ m/s}^2,$$

$$v_i = 72 \frac{\text{km}}{\text{h}} = 20 \text{ m/s},$$

$$t = 5 \text{ min} = 300 \text{ s},$$

$$v_f = ?$$

The kinematic equation that describes an object's motion is:

$$a = \frac{v_f - v_i}{t}$$

Thus,

$$v_f = v_i + at$$

$$v_f = 20 - 2 \cdot 300 = -580$$

Thus, car stops.

**Answer:** Final velocity is  $0 \text{ km/h}$ .