Answer on Question 70405, Physics | Mechanics | Relativity

Question:

How long does it take a car to travel 2.2 meters if its acceleration from rest is 2.9 m/s^2?

Solution:

We can find the time that the car needs to travel 2.2 meters from the kinematic equation:

$$d = v_0 t + \frac{1}{2} a t^2,$$

here, d is the distance traveled by the car, v_0 is the initial velocity of the car (since the car starts from rest its initial velocity equals to zero), a is the acceleration of the car and t is the time that needs the car to travel the distance d.

Then, we get:

$$d = \frac{1}{2} a t^2,$$

$$t = \sqrt{\frac{2d}{a}} = \sqrt{\frac{2 \cdot 2.2\ m}{2.9\ \frac{m}{s^2}}} = 1.23\ s.$$

Answer:

$t = 1.23\ s.$