Answer on Question #59555-Physics – Mechanics | Relativity

A bus starting from rest has uniform acceleration of 5m/sec^2 simultaneously moves along the same road with constant velocity of 50m/sec. what the car and bus meet the velocity of the bus is?

Solution

$$d_{bus} = \frac{at^2}{2}$$

$$d_{car} = vt$$

$$d_{bus} = d_{car} \rightarrow vt = \frac{at^2}{2}$$

$$t = \frac{2v}{a}.$$

$$d = v\frac{2v}{a} = \frac{2v^2}{a} = \frac{2(50)^2}{5} = 1000\,m.$$

The velocity of the bus is

$$v_{bus} = at = a\frac{2v}{a} = 2v = 100\frac{m}{s}.$$