4 A trolley moves down a slope, as shown in Fig. 4.1.

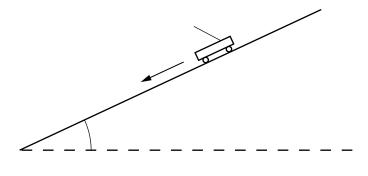


Fig. 4.1

The slope makes an angle of  $25^{\circ}$  with the horizontal. A constant resistive force  $F_{\rm R}$  acts up the slope on the trolley.

At time t = 0, the trolley has velocity  $v = 0.50 \,\mathrm{m\,s^{-1}}$  down the slope.

At time t = 4.0 s,  $v = 12 \text{ m s}^{-1}$  down the slope.

(a) (i) Show that the acceleration of the trolley down the slope is approximately  $3 \,\mathrm{m}\,\mathrm{s}^{-2}$ .

[2]

(ii) Calculate the distance x moved by the trolley down the slope from time t = 0 to t = 4.0 s.

 $x = \dots m [2]$ 

(iii) On Fig. 4.2, sketch the variation with time t of distance x moved by the trolley.

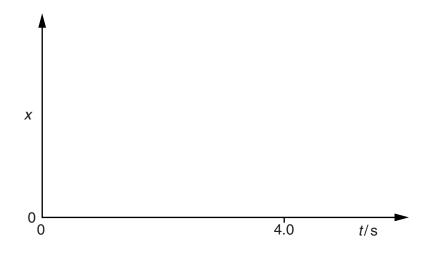


Fig. 4.2

[1]
N [2]