A small object of mass 0.4 kg is released from rest at a point 8 m above the ground. The object descends vertically and when its downwards displacement from its initial position is x m the object has velocity v m s^{-1}. While the object is moving, a force of magnitude $0.2v^2$ N opposes the motion.

(i) Show that $v\dfrac{\mathrm{d}v}{\mathrm{d}x} = 10 - 0.5v^2$. [2]

(ii) Express v in terms of x. [4]

(iii) Find the increase in the value of v during the final 4 m of the descent of the object. [2]