A particle P of mass 0.2 kg is projected horizontally from a fixed point O on a smooth horizontal surface. When the displacement of P from O is x m the velocity of P is $v\,\mathrm{m\,s^{-1}}$. A horizontal force of variable magnitude $0.09\sqrt{x}$ N directed away from O acts on P. An additional force of constant magnitude 0.3 N directed towards O acts on P.

(i) Show that $v\dfrac{\mathrm{d}v}{\mathrm{d}x} = 0.45\sqrt{x} - 1.5$. [2]

(ii) Find the value of x for which the acceleration of P is zero. [2]

(iii) Given that the minimum value of v is positive, find the set of possible values for the speed of projection. [5]