A particle P of mass $1\,\mathrm{kg}$ is moving along a straight line against a resistive force of magnitude $\dfrac{10\sqrt{v}}{(t+1)^2}$ N, where $v\,\mathrm{m\,s^{-1}}$ is the speed of P at time $t\,\mathrm{s}$. When $t=0$, $v=25$.

Find an expression for v in terms of t. [5]