A particle P is moving in a horizontal straight line. Initially P is at the point O on the line and is moving with velocity $25\,\mathrm{m\,s^{-1}}$. At time t s after passing through O, the acceleration of P is $\dfrac{4000}{(5t+4)^3}\,\mathrm{m\,s^{-2}}$ in the direction PO. The displacement of P from O at time t is x m.

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