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7. Three quarters attempted this with more success than question 6 but less than question 3. Sadly, it was not uncommon for candidates to fail to differentiate $E(x)$ correctly. Many established that $\frac{dE}{dx} = 0$ but then $\frac{d^2y}{dx^2} = -1$, when $y = 1$, $\frac{dy}{dx} = 0$, and $x = 0$ giving a maximum which was not sufficient and missed the point of the squared $\frac{dy}{dx}$ term in $E(x)$, with consequences for the rest of the question. Many followed the stationary points line of logic correctly by considering the maximum and minimum values in part (i). Having established the constant value of $E(x)$, some candidates attempted to solve the differential equation, usually by incorrect methods. The errors of part (i) were largely replicated in part (ii). There were fewer attempts at part (iii), and a number fell at the first hurdle through not obtaining the correct $E(x)$. Further, numerous candidates assumed rather than proved that $5\cosh x - 4\sinh x - 3 \geq 0$.