**6** A curve is such that $\frac{dy}{dx} = k - 2x$, where $k$ is a constant.

**(i)** Given that the tangents to the curve at the points where $x = 2$ and $x = 3$ are perpendicular, find the value of $k$. [4]

**(ii)** Given also that the curve passes through the point $(4, 9)$, find the equation of the curve. [3]