6 A curve is such that $\dfrac{dy}{dx} = \dfrac{12}{\sqrt{(4x+a)}}$, where a is a constant. The point $P(2, 14)$ lies on the curve and the normal to the curve at P is $3y + x = 5$.

  (i) Show that $a = 8$. [3]

  (ii) Find the equation of the curve. [4]