6 It is given that $x = 2 + \sec\theta$ and $y = 5 + \tan^2\theta$.

(a) Express y in terms of x. [2]

(b) Find $\frac{\mathrm{d}y}{\mathrm{d}x}$ in terms of x. [1]

(c) A curve has the equation found in **part (a)**. Find the equation of the tangent to the curve when $\theta = \frac{\pi}{3}$. [4]

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