6 Find $\int_2^4 \left(\frac{2}{2x-3} - \frac{3}{(3x-5)^2} \right) \mathrm{d}x$, giving your answer in exact form. [4]

7 Given that $2 + \cot\theta = 3x$ and $\sin\theta = \sqrt{y}$, find y in terms of x. [3]

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8 Solve the equation $4\sin^2\left(2\alpha - \frac{\pi}{3}\right) = 1$ for $-\frac{\pi}{2} \leqslant \alpha \leqslant \frac{\pi}{2}$. Give your answers in terms of π. [5]