4 **(a)** Show that $\frac{1}{2x-1}+\frac{4}{(2x-1)^2}$ can be written as $\frac{2x+3}{(2x-1)^2}$. [1]

(b) Find $\int_2^5 \frac{2x+3}{(2x-1)^2}\mathrm{d}x$, giving your answer in the form $a+\ln b$, where a and b are constants. [5]

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5 Variables x and y are such that $y = \dfrac{\ln(2x^2 - 3)}{3x}$.

(a) Find $\dfrac{\mathrm{d}y}{\mathrm{d}x}$. [3]

(b) Hence find the approximate change in y when x increases from 2 to $2 + h$, where h is small. [2]

(c) At the instant when $x = 2$, y is increasing at the rate of 4 units per second. Find the corresponding rate of increase in x. [2]

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