5 When e^{y} is plotted against x^2, a straight-line graph with gradient -3 is obtained. The line passes through the point $(4.30, 5.85)$.

(a) Find y in terms of x. [4]

(b) Find the values of x for which y exists. [3]

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6 It is given that $y = \dfrac{\ln\left(2x^2+1\right)}{x+2}$.

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

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

(c) Given that y is decreasing by 0.4 units per second, find the corresponding rate of change in x when $x = 2$. [3]