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**6** **(a)** Find, in descending powers of $x$, the first 3 terms in the expansion of $\left(x+\frac{2}{x^2}\right)^{10}$. Simplify each term as far as possible. [3]

**(b)** Find the term independent of $x$ in the expansion of $\left(4x^2+\frac{1}{2x^2}\right)^8$. [2]

**7** It is given that $y = \dfrac{\ln(3x^2 - 1)}{x + 2}$, for $x > \dfrac{1}{\sqrt{3}}$. When $x = 1$, $y$ is increasing at the rate of $h$ units per second. Find, in terms of $h$, the corresponding rate of change in $x$, giving your answer in exact form.

[6]

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