11 (a) (i) Find $\int \frac{1}{(10x-1)^6} \mathrm{d}x$. [2]

(ii) Find $\int \frac{(2x^3+5)^2}{x} \mathrm{d}x$. [3]

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(b) (i) Differentiate $y = \tan(3x+1)$ with respect to x. [2]

(ii) Hence find $\int_{\frac{\pi}{12}}^{\frac{\pi}{10}} \left(\frac{\sec^2(3x+1)}{2} - \sin x \right) \mathrm{d}x$. [4]

Question 12 is printed on the next page.