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**4** **(a)** Integrate the following with respect to $x$.

**(i)** $e^{5x-2}$ [2]

**(ii)** $\frac{1}{4-3x}$ where $x < \frac{4}{3}$ [2]

**(b)** Show that $\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sec^2\left(\frac{1}{2}x\right) dx = 2\left(1 - \frac{\sqrt{3}}{3}\right)$. [3]

**5** Six different digits are chosen from the nine digits 1, 2, 3, 4, 5, 6, 7, 8, 9.
These digits are used to form a 6-digit number.
Find how many 6-digit numbers can be formed in the following cases.

**(a)** There are no restrictions. [1]

**(b)** The number is greater than 700 000. [2]

**(c)** The number is greater than 750 000. [3]

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