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**1** The curve $y = a\cos bx + c$, where $a$, $b$ and $c$ are integers, passes through the points $\left(-\frac{\pi}{6}, -2\right)$ and $\left(\frac{\pi}{9}, \frac{1}{2}\right)$. The curve has a period of $\frac{2\pi}{3}$.

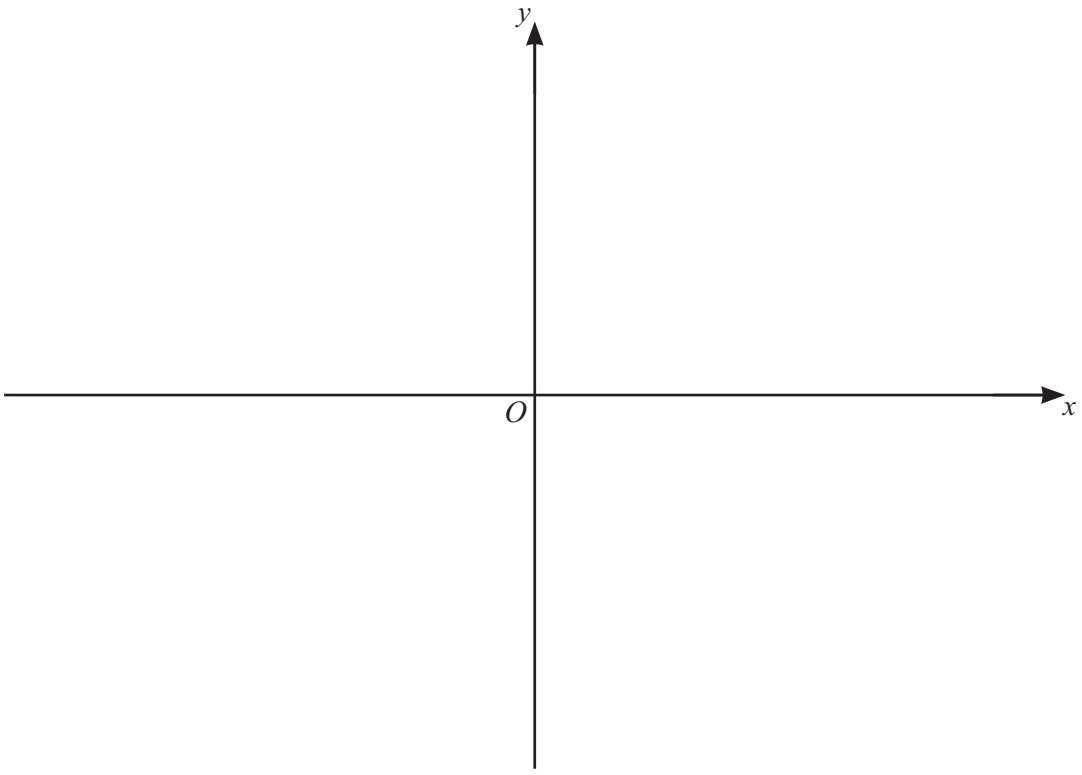
**(a)** Find the values of $a$, $b$ and $c$. [4]

**(b)** Find the least value of $y$ on the curve for $0 \leqslant x \leqslant \frac{\pi}{2}$, and state the value of $x$ at which this occurs. [3]

**2** It is given that $y = \mathrm{f}(x)$, where $\mathrm{f}(x) = (2x-5)(x-1)^2$.

**(a)** Find the coordinates of the stationary points on the curve $y = \mathrm{f}(x)$. [4]

**(b)** On the axes, sketch the graph of $y = \mathrm{f}(x)$, stating the intercepts with the axes. [3]




**(c)** Hence find the values of $k$ for which $\mathrm{f}(x) = k$ has exactly one solution. [2]

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