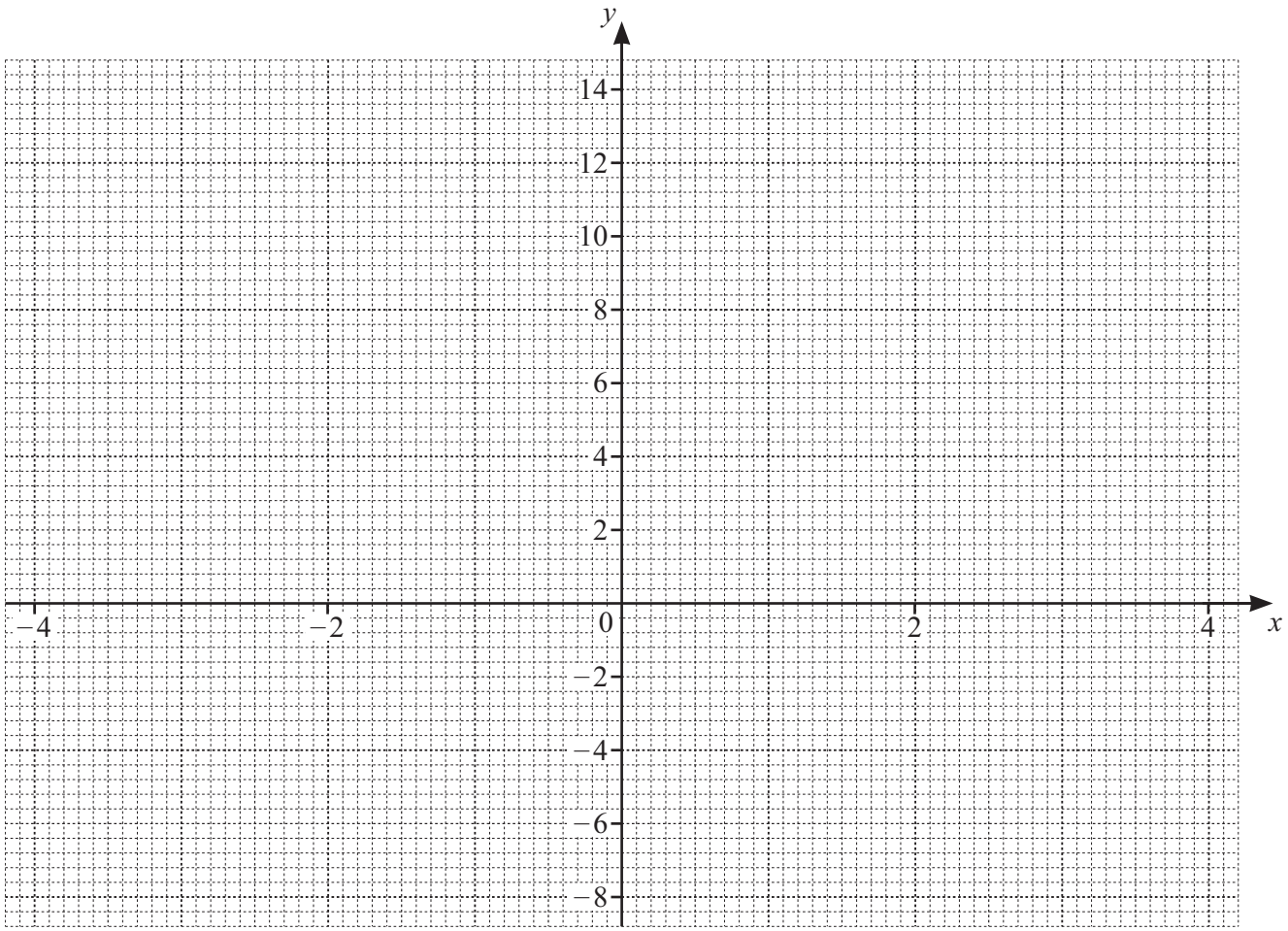
3 **(a)** **(i)** Write $x^2 - x - 6$ in the form $(x+a)^2 + b$ where a and b are constants. [2]

(ii) Hence write down the coordinates of the stationary point on the curve $y = x^2 - x - 6$. [2]

(b) On the axes, draw the graph of $y = |x^2 - x - 6|$ for $-4 \leqslant x \leqslant 4$. [3]



(c) Use your graph to solve the inequality $|x^2 - x - 6| < 4$. [2]

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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]