10 (a) $g(x) = 3 + \frac{1}{x}$ for $x \geqslant 1$.

(i) Find an expression for $g^{-1}(x)$. [2]

(ii) Write down the range of g^{-1}. [1]

(iii) Find the domain of g^{-1}. [2]

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(b) $\mathrm{h}(x) = 2\ln(3x-1)$ for $x \geqslant \frac{2}{3}$.

The graph of $y = \mathrm{h}(x)$ intersects the line $y = x$ at two distinct points. On the axes below, sketch the graph of $y = \mathrm{h}(x)$ and hence sketch the graph of $y = \mathrm{h}^{-1}(x)$. [4]

