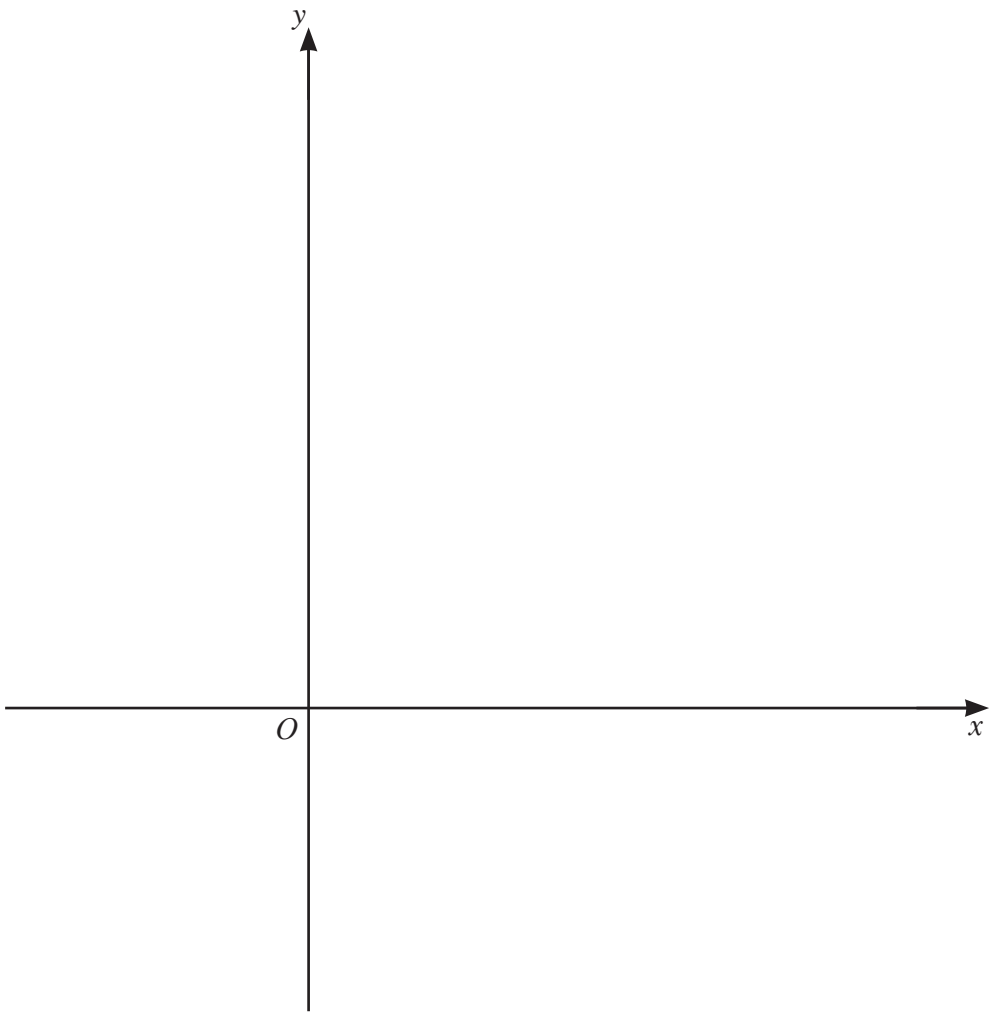
7 It is given that $\mathrm{f}(x) = 5\ln(2x+3)$ for $x > -\frac{3}{2}$.

**(a)** Write down the range of f. [1]

**(b)** Find $\mathrm{f}^{-1}$ and state its domain. [3]

**(c)** On the axes below, sketch the graph of $y = \mathrm{f}(x)$ and the graph of $y = \mathrm{f}^{-1}(x)$. Label each curve and state the intercepts on the coordinate axes.




[5]

**8** **(a)** **(i)** Show that $\dfrac{1}{(1+\operatorname{cosec}\theta)(\sin\theta-\sin^2\theta)} = \sec^2\theta$. [4]

**(ii)** Hence solve $(1+\operatorname{cosec}\theta)(\sin\theta-\sin^2\theta) = \dfrac{3}{4}$ for $-180° \leqslant \theta \leqslant 180°$. [4]

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