10 Functions f and g are defined by

$$\mathrm{f} : x \mapsto 2x - 5, \quad x \in \mathbb{R},$$
$$\mathrm{g} : x \mapsto \frac{4}{2 - x}, \quad x \in \mathbb{R}, \ x \neq 2.$$

(i) Find the value of x for which $\mathrm{fg}(x) = 7$. [3]

(ii) Express each of $\mathrm{f}^{-1}(x)$ and $\mathrm{g}^{-1}(x)$ in terms of x. [3]

(iii) Show that the equation $\mathrm{f}^{-1}(x) = \mathrm{g}^{-1}(x)$ has no real roots. [3]

(iv) Sketch, on a single diagram, the graphs of $y = \mathrm{f}(x)$ and $y = \mathrm{f}^{-1}(x)$, making clear the relationship between these two graphs. [3]