10 The polynomial $\mathrm{f}(x)$ is given by

$$\mathrm{f}(x) = x^3 - 2ax^2 + 28x + 4b$$

It is given that $(x - 2)$ is a factor of $\mathrm{f}(x)$

10 (a) Show that $2a - b = 16$ **[2 marks]**

10 (b) A second polynomial $\mathrm{g}(x)$ is given by

$$\mathrm{g}(x) = 2x^3 - ax^2 - 4x - 2b$$

It is given that $(x - 2)$ is also a factor of $\mathrm{g}(x)$

10 (b) (i) Find the value of a and the value of b **[3 marks]**

10 (b) (ii) Show that there are exactly two distinct solutions to the equation

$$\mathrm{f}(x) = \mathrm{g}(x)$$

Fully justify your answer. **[5 marks]**