2 Find the values of k for which the equation $x^2 + 4kx + k + 3 = 0$ has two equal roots. [4]

3 The polynomial p is such that $\mathrm{p}(x) = x^3 + Ax + 30$, where A is a constant.
When $\mathrm{p}(x)$ is divided by $x + 2$ the remainder is 84.

Write $\mathrm{p}(x)$ as a product of linear factors. [5]

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4 Solve the equation $\frac{2}{\log_x 10} - \lg(x+4) = \lg 2$ for $x > 0$. [5]

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