4 **(a)** It is given that the first four terms, in ascending powers of x, in the expansion of $\left(1-\frac{x}{2}\right)^n$ can be written in the form $1-8x+px^2+qx^3$, where n, p and q are integers. Find the values of n, p and q. [5]

(b) Find the term independent of x in the expansion of $\left(\frac{2}{x^2}+\frac{x}{3}\right)^6$, giving your answer as a rational number. [2]

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5 Solve the equation $3\sec^2\left(2\theta+\frac{\pi}{6}\right)=4$ for $-\frac{\pi}{2}<\theta<\frac{\pi}{2}$, giving your answers in terms of π. [5]