1 **(a)** Find the rational numbers a, b and c, such that the first three terms, in descending powers of x, in the expansion of $\left(3x^2 - \frac{1}{9x}\right)^5$ can be written in the form $ax^{10} + bx^7 + cx^4$. [3]

(b) Hence find the coefficient of x^4 in the expansion of $\left(3x^2 - \frac{1}{9x}\right)^5\left(1 + \frac{1}{x^3}\right)^2$. [3]