7 **(a)** Find the term independent of x in the expansion of $\left(x^2 - \frac{3}{x^4}\right)^{15}$. [2]

(b) In the expansion of $(1+ax)^9$ the coefficient of x^3 is 7 times the coefficient of x^2.

Given that a is a positive constant, find the value of a. [3]

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8 **(a)** It is given that $y = e^{3x+2} \tan x$.

Use calculus to find the approximate change in y as x increases from 0.1 to $0.1 + h$, where h is small. [5]

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