7 **(a)** Show that the constant term in the binomial expansion of $\left(3x^2+\frac{2}{x}\right)^6$ is 2160. **[3]**

(b) Find the constant term in the binomial expansion of $\left(\sqrt{x}+\frac{5}{x}\right)^6$. **[3]**

(c) Explain why the constant term in the expansion of $\left(3x^2+\frac{2}{x}\right)^6\left(\sqrt{x}+\frac{5}{x}\right)^6$ is not the product of your answers to part **(a)** and part **(b)**. **[1]**