**2.** (a) Show that the differential equation

$$(x + 2)\frac{dy}{dx} = 3x^2 + 6x - y \qquad x \neq -2$$

can be written in the form

$$\frac{dy}{dx} + f(x)y = kx$$

where f is a function to be determined and $k$ is a constant to be found.

**(2)**

Given that $y = 18$ at $x = 4$

(b) use the answer to part (a) to determine, in simplest form, the particular solution of the differential equation.
Give the answer in the form $y = g(x)$

**(6)**

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**Question 2 continued**

**(Total for Question 2 is 8 marks)**