1.

$$\frac{dy}{dx} - 3y \tan x = \sec^2 x$$

(a) Show that an integrating factor for this differential equation is given by

$$p(x) = \cos^3 x$$

(2)

Given that $y = 4$ when $x = \frac{\pi}{4}$

(b) determine the particular solution of the differential equation.

Give your answer in the form $y = f(x)$.

(4)

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Question 1 continued

(Total for Question 1 is 6 marks)