7. Given that $y = e^x \sin x$

(a) show that

$$\frac{d^6y}{dx^6} = k\frac{d^2y}{dx^2}$$

where k is a constant to be determined.

(4)

(b) Hence determine the first 5 non-zero terms in the Maclaurin series expansion for y, giving each coefficient in simplest form.

(3)

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Question 7 continued

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Question 7 continued

(Total for Question 7 is 7 marks)