

Start here for

Question Number: **4**

$$(a)(i) \text{ distance} = 1 + (250 \times (1-9)) = 7 \text{ Km}$$

$$(ii) \quad 1 + (n \times 0.75) = 10$$

$$n = 13 \quad (\text{week})$$

$$(iii) \quad \left( \sum_{i=1}^{n=13} 1 + (i-1)0.75 \right) + 13 \times 10 =$$

$$130 + \left( \frac{11}{2} \times 13 \right) = 201.5$$

$$(b) \quad A = \left( \int_0^2 e^{2x} dx \right) - \left( \int_0^2 e^{-x} dx \right)$$

$$= \int_0^2 e^{2x} - e^{-x} dx$$

$$= \left[ \frac{1}{2} e^{2x} + e^{-x} \right]_0^2$$

$$= \left( \frac{1}{2} e^4 + e^{-2} \right) - \left( \frac{1}{2} + 1 \right)$$

$$= \frac{1}{2} e^4 + \frac{1}{e^2} - 2$$

$$(c)(i) \quad \frac{1}{3} \times \frac{3}{11} = \frac{1}{11}$$

$$(ii) \quad \frac{1}{3} \times \frac{3}{11} \times 3 = \frac{3}{11}$$

$$(iii) \quad 1 - \frac{3}{11} = \frac{8}{11}$$

$$(d) \quad \text{LHS} = f(x) \times f(-x) = (1+e^x) \times (1+e^{-x})$$

$$= 1 + e^x + e^{-x} + 1$$

$$= e^x + e^{-x} + 2$$

$$= 1 + e^x + 1 + e^{-x}$$

$$= f(x) + f(-x)$$

$$= \text{RHS}$$