



$$(a) \int_0^1 \frac{dx}{x+4}$$

$$= [\ln x+4]_0^1$$

$$= \ln 5 - \ln 4$$

$$= \ln \frac{5}{4}$$

$$(b) S = kM^{\frac{2}{3}}$$

$$k \frac{70^{\frac{2}{3}}}{3} = 18600 \text{ cm}^2$$

$$k = 18600 \div (70^{\frac{2}{3}})$$

$$= 1095.08 \dots$$

\therefore person weighing 60 kg

$$\text{has } S = k 60^{\frac{2}{3}}$$

$$= 16783.469 \dots$$

$$(c) \frac{d}{dx} \ln(x^2 - 9)$$

$$= \frac{2x}{x^2 - 9}$$



$$(ii) \quad \frac{x}{e^x} = \frac{e^x \times 1 - x \times e^x}{e^{2x}}$$

$$= \frac{e^x(1-x)}{e^{2x}}$$

$$= \frac{1-x}{e^x}$$

$$(d) \quad \cancel{x^2 = 13^2 + 7^2 - 13 \cdot 7 \cdot \cos 60}$$

$$13^2 = x^2 + 7^2 - 7x \cos 60$$

$$13^2 - 7^2 = x^2 - 7x \cos 60$$

$$\cancel{13-7} 120 = x^2 - 7x \times \frac{1}{2} \quad ?$$

$$x^2 - 7x = 120$$

$$x^2 - 7x - 120 = 0$$

$$(x-15)(x+8) = 0$$

$x = 15$. (since -8 is not a valid distance)