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

$= \left[\log_e(x+4)\right]_0^1$

$= (\log_e 1+4) - (\log_e 0)$

$= \log_e 5 - 1$

(b) $s = KM^{\frac{2}{3}}$

$18600 = K\,70^{\frac{2}{3}}$

$18600 = 16.98499252\,K$

$K =$ [illegible] ...

$K = 1095.08438$

Human body mass 60

$S = 1095.08438 \times 60^{\frac{2}{3}}$

$S = 16783.47$ (2 dp).

(c) $\ln(x^2-9)$

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

(ii) $\frac{x}{e^x}$

$u = x \qquad v = e^x$

$du = 1 \qquad dv = e^x$

using quotient rule

$\frac{v\,du - u\,dv}{v^2}$

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

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

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

BOARD OF STUDIES
NEW SOUTH WALES

(d) $a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 7^2 + 13^2 - 2 \times 7 \times 13 \cos 60$

$a^2 = 36 \times \frac{1}{2}$

$a^2 = 18$

$a = \sqrt{18}$

$= \sqrt{9} \times \sqrt{2}$

$a = 3\sqrt{2}$

$\cos A = \frac{a^2 + b^2 - c_2}{2ab}$

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

$\cos A = \frac{b^2 - c^2 + a^2}{2bc\cos A?}$

$\cos A = \frac{\cancel{7a} - 13^2 - 7^2 + x^2}{2 \times 13 \times 7 \cos A}$

$\cos A = 120 + x^2$

$\cos 60 = \frac{b^2 + c^2 - a^2}{2bc}$

$= \frac{13^2 + 7^2 - a^2}{2 \times 13 \times 7}$

$\cos 60 = \frac{218 - a^2}{182}$

$\cos 60 + a^2 = \frac{218}{182}$