

$$3a. \int_0^1 \frac{dx}{x+4}$$

$$= \int_0^1 (x+4)^{-1}$$

$$\frac{(x+4)^{-2}}{-2}$$

$$\left[ \frac{x+4^{-2}}{-2} \right]_0^1$$

$$\left( \frac{1+4^{-2}}{-2} \right) - \left( \frac{0}{-2} \right)$$

$$= -0.53125$$

$$b. f = kM^{2/3}$$

$$f = k \cdot 70$$

$$18600 = k \cdot 70^{2/3}$$

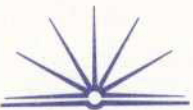
$$\ln 18600 = \ln k \cdot 70^{2/3} \quad 16.98499252$$

$$k = \frac{\ln 18600}{\ln 70^{2/3}}$$

$$= \frac{16.98499252}{16.98499252}$$

$$= 1$$

$$\ln 18600 = \ln k \cdot 70^{2/3}$$



e) i.  $\ln(x^2-9)$

$$y' = \frac{1}{(x^2-9)}$$

$$= \frac{1}{(x-3)(x+3)}$$

ii.  $\frac{x}{e^x}$

$$= \frac{v u' - u v'}{v^2}$$

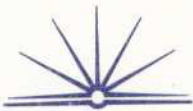
$$u = x \quad v = e^x$$

$$u' = 1 \quad v' = e^x$$

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

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

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



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

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

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

$$x = 15 \text{ or } x = -8$$

$$\text{Cosine rule} = a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 =$$