

$$a_7, y = e^{2x}$$

$$\frac{dy}{dx} = 2e^{2x}$$

$$2e^{2x} = m$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = 2e^{2x}(x - 0)$$

$$y - 1 = 2xe^{2x}$$

$$y = 2xe^{2x} + 1$$

$$b_i, y = x^u \sin^v x$$

$$\frac{dy}{dx} = v u' + u v'$$

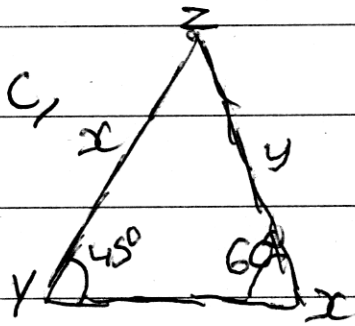
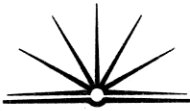
$$= \sin x - x \cos x$$

$$b_{ii}, y = \ln x \quad u$$
$$x^2 \quad v$$

$$\frac{dy}{dx} = \frac{vu' - uv'}{v^2}$$

$$= \frac{x^2 \cdot \frac{1}{x} - 2x \ln x}{x^4}$$

$$= \frac{x - 2x \ln x}{x^4}$$



$$\frac{x}{y} = \frac{405}{60}$$
$$= \frac{3}{4}$$

∴ The ratio of  $\frac{x}{y}$  is 3:4

$$d/i \int \cos 3x dx = \frac{1}{3} \sin 3x + C$$

$$d/ii \int_0^1 (e^{5x} - 1) dx = \left[ \frac{1}{5} e^{5x} - x \right]_0^1$$
$$= (28.68263) - \left( \frac{1}{5} \right)$$
$$\approx 28.48263$$