

QUESTION 2

(0, 1)

a) To find tangent must find m .

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

$$y' = 2e^{2x}$$

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

Sub ~~0~~ 0 into x .

$$m = 2$$

\therefore The equation of the tangent is:

$$y - y' = m(x - x')$$

$$y - 1 = 2(x - 0)$$

$$y - 1 = 2x - 0$$

$$\therefore y - 2x - 1 = 0$$

b) ~~Find~~

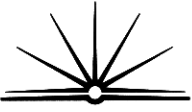
i) $y = x \sin x$

$$y' = x \cos x$$

ii) $y = \frac{\ln x}{x^2}$

$$y = \ln x^{-1}$$

$$y' = -\frac{1}{x}$$



c). in triangle 3 7 7.

The ratio $1 : \sqrt{2}$.

d). i). $\int \cos 3x \, dx$

$$= \frac{1}{3} \sin 3x$$

ii). $\int_0^1 (e^{5x} - 1) \, dx$

$$= \left[\frac{1}{5} e^{5x} - 1x \right]_0^1$$

$$= \left[\frac{1}{5} e^{5 \times 1} - 1 \times 1 \right] - \left[\frac{1}{5} e^{5 \times 0} - 1 \times 0 \right]$$

$$= \left[\frac{e^5}{5} - 1 \right] - \left[\frac{1}{5} - 0 \right]$$

$$= \left[\frac{e^5}{5} - \frac{1}{5} \right]$$