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Question 2 (0, 1).

a). To find tangent must find m.

$y = e^{2x}$

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

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

Sub 0 into x.

$m = 2$

∴ The equation of the tangent is:

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

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

$y - 1 = 2x - 0$.

∴ $y - 2x - 1 = 0$.

b).

i). $y = x \sin x$.

$y' = x \cos x$.

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

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

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

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c). in triangle $\frac{1}{2}$ ZYZ.

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

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

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

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

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

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

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

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