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DEPT : COMPUTER ENGINEERING
MATRIC : 18/ENG02/059
COURSE : General Mathematics

1 $x^{\frac{1}{2}} \ln x$

using product rule

$\frac{d}{dx}[F(x)g(x)] =$

$f(x)\frac{d}{dx}[g(x)]$

$+ g(x)\frac{d}{dx}[f(x)]$

$= \frac{1}{x^{\frac{1}{2}}} + \frac{\ln(x)}{2x^{\frac{1}{2}}}$

2 $2\cos 6t \cdot \cos t$

using product rule

$\frac{d}{dt}[f(t)g(t)] =$

$f(t)\frac{d}{dt}[g(t)] + g(t)$

$\frac{d}{dt}[f(t)]$

$= -2\cos(6t)\sin(t) - 12\cos(t)\sin(6t)$

3 $\sin 3x \cos 4x$

using

$\sin(t) \times \cos(s) = \frac{1}{2} \times (\sin(t+s) + \sin(t-s))$

$\therefore \sin 3x \cdot \cos 4x$

$\frac{1}{2} \times (\sin(7x) + \sin(x))$

Divide through by $\frac{1}{2}$

$$\frac{\sin(7x)}{2} + \frac{\sin(3x)}{2} =$$