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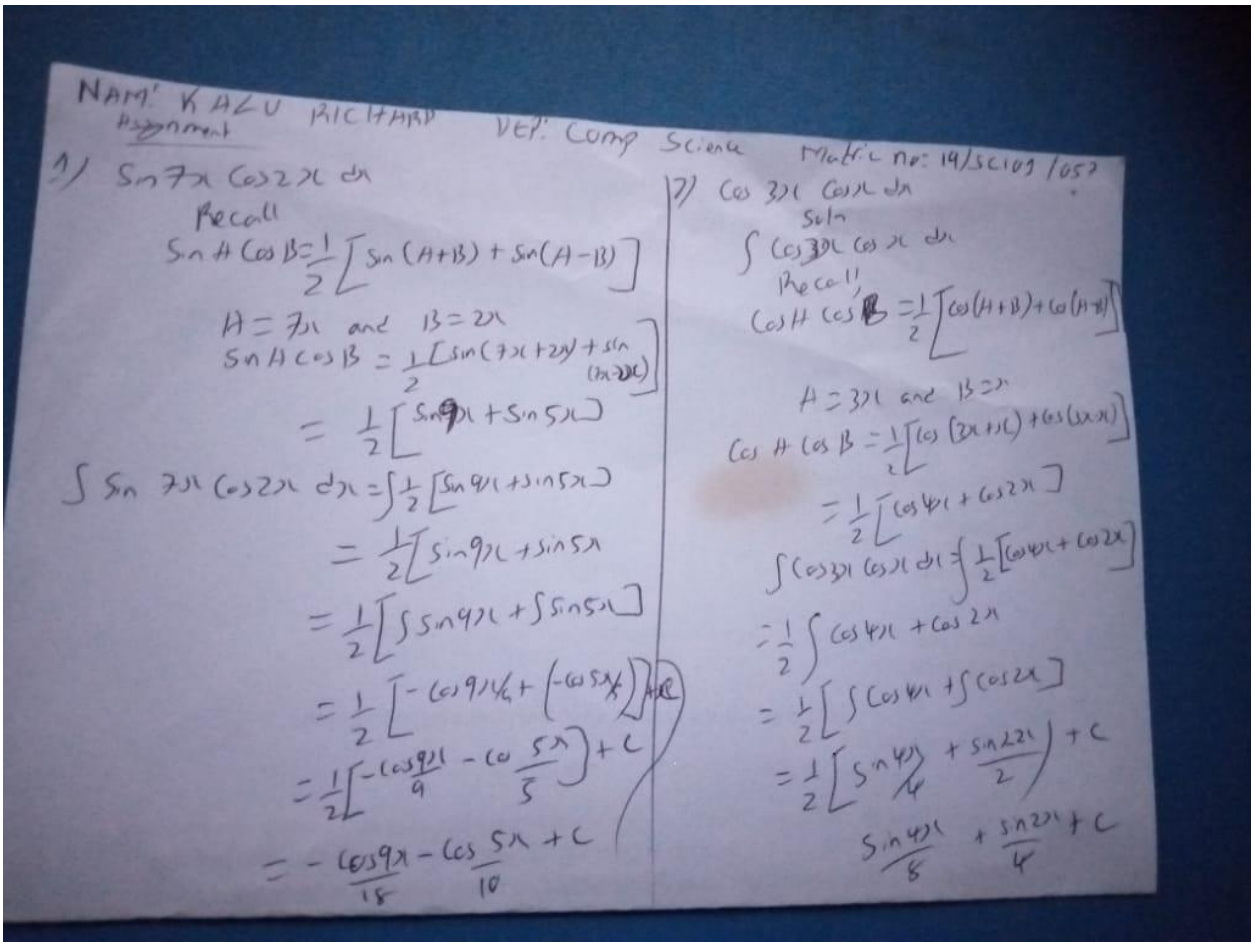
MATRIC NO: 19/SCI01/057

ASSIGNMENT



3) $\int \frac{\cos x}{\sin^2 x}\,dx$

Soln

$\int \frac{\cos x}{\sin^2 x}\,dx$

let $u = \sin x$

$\frac{du}{dx} = \cos x$

$du = \cos x\,dx$

$dx = \frac{1}{\cos x}\,du$

we have,

$\int \frac{\cos x}{\sin^2 x}\,dx = \int \frac{\cos x}{\sin^2 x} \times \frac{1}{\cos x}\,du = \int \frac{1}{\sin^2 x}\,du$

recall, $u = \sin x$

$= \int \frac{1}{u^2}\,du = \int u^{-2}\,du = \left[\frac{u^{-2+1}}{-2+1}\right] = \frac{u^{-1}}{-1} = -u^{-1}$

$= \frac{-1}{u} = \frac{-1}{\sin x}$ //

4) $\int_1^2 \left(\int_0^3 9xz^2y\,dx\right)dy$

Soln

$\int_0^3 9xz^2y\,dx$

$= \left[\frac{9x^2}{2}z^2y\right]_0^3 = 3(3)^2y - 3(0)^2y$

$= 81y$

$= \int_1^2 81y\,dy$

$= \left[\frac{81y^2}{2}\right]_1^2 = \frac{81(2)^2}{2} - \frac{81(1)^2}{2}$

$= \frac{324}{2} - \frac{81}{2} = \frac{324-81}{2} = \frac{243}{2}$

$= 121.5$ or $121\frac{1}{2}$ //