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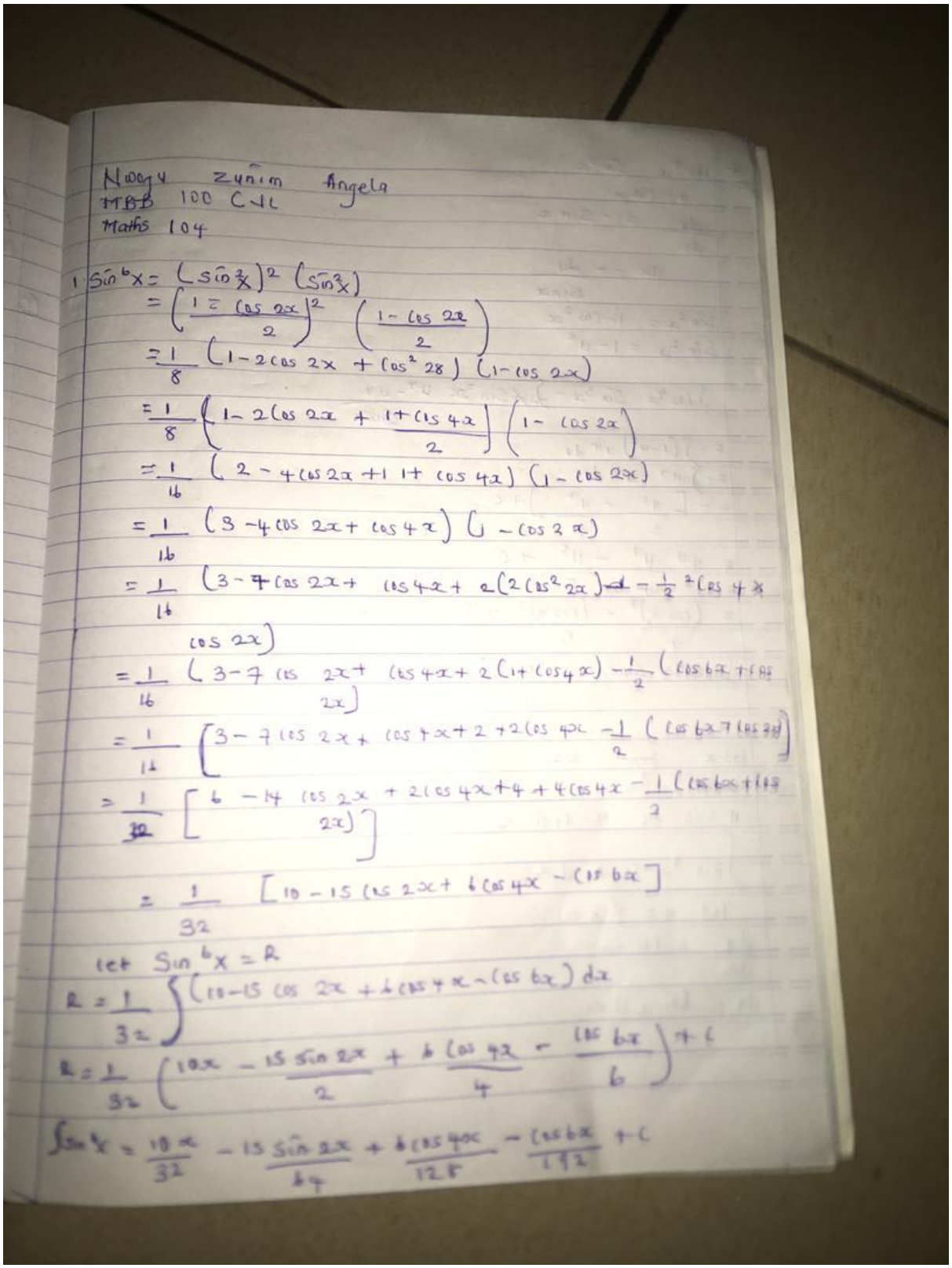
Course Code: Mat 104



2 $\cos^4 x \sin^3 x$

$u = \cos x$

$\frac{du}{dx} = -\sin x$

$dx = -\frac{du}{\sin x}$

$\sin^2 x = 1 - \cos^2 x$

$\sin^2 x = 1 - u^2$

$\int \cos^4 x \sin^3 x = \int \sin^3 x \, u^4 \cdot \frac{du}{\sin x}$

$= -\int (1-u^2) u^4 \, du$

$= -\int u^4 - u^6 \, du$

$= -\left[\frac{u^5}{5} - \frac{u^7}{7}\right] + C$

$= \frac{u^7}{7} - \frac{u^5}{5} + C$

$= \frac{(\cos x)^7}{7} - \frac{(\cos x)^5}{5} + C$

$\int \cos^4 x \sin^3 x = \frac{(\cos x)^7}{7} - \frac{(\cos x)^5}{5} + C$

3 ~~$\cos x \quad \sin \quad 3x$~~

3 $\cos x \sin^3 x$

It can be re-wrote as

$\int \sin^3 x \cos x \, dx$

let $u = \sin x$

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

$du = \cos x \, dx$.