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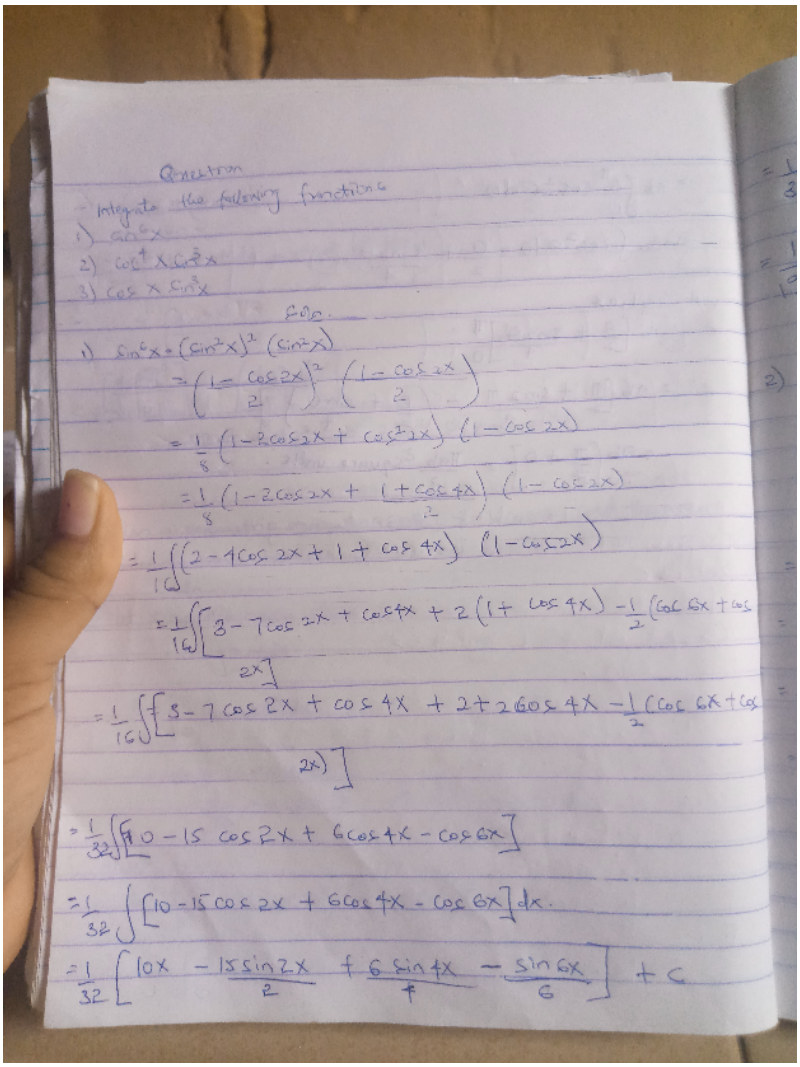
MATRIC NO:19/MHS01/188

COURSE CODE: MAT 104

ASSIGNMENT 11



$$= \frac{1}{32}\left[10x - \frac{15\sin 2x}{2} + \frac{3\sin 4x}{2} - \frac{\sin 6x}{6}\right] + C$$

$$= \frac{1}{192}\left[60x - 45\sin 2x + 9\sin 4x - \sin 6x\right] + C$$

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

Let $u = \cos x$

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

$$\int u^4 \cdot \sin x \cdot \sin^2 x \cdot \frac{-du}{\sin x}$$

$$= -\int u^4 \cdot \sin^2 x \cdot du$$

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

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

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

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

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

3) $\cos x \sin^3 x$

$u = \sin x$

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

$du = \cos x\, dx$

$$\int u^3 \cdot du$$

$$= \left[\frac{u^4}{4}\right] + C$$

$$\Rightarrow \frac{\sin^4 x}{4} + C$$