$$\int \cos^3(2x)\,dx$$

Compute $\int \cos^3(2x)\,dx$.

28/8/25

$$\int \cos^3(2x)\,dx$$

Compute $\int \cos^3(2x)\,dx$.

$$\int \cos^3(2x)\,dx$$

Let $u = \sin 2x$.

$\Rightarrow du = 2\cos 2x\,dx$

$$= \int (1 - \sin^2(2x))\cos(2x)\,dx$$

$$= \frac{1}{2}\int (1 - u^2)\,du$$

$$= \frac{1}{2}\left(u - \frac{u^3}{3} + C_1\right)$$

$$= -\frac{u^3}{6} + \frac{u}{2} + C$$

$$= -\frac{\sin^3 2x}{6} + \frac{\sin 2x}{2} + C$$