$$\int \cos^2 x \, dx =$$

INT-S1-049

PER PARTI

$$= \int \cos x \cdot \cos x \, dx = \left[\int \cos x\right] \cos x - \int \left[\int \cos x\right]\left[D \cos x\right] dx =$$

$$= + \operatorname{sen} x \cos x - \int \operatorname{sen} x (-\operatorname{sen} x) \, dx =$$

$$= \operatorname{sen} x \cos x + \int \operatorname{sen}^2 x \, dx =$$

$$= \operatorname{sen} x \cos x + \int 1 - \cos^2 x \, dx =$$

$$= \operatorname{sen} x \cos x + \int 1 dx - \int \cos^2 x \, dx =$$

$$= \operatorname{sen} x \cos x + x - \int \cos^2 x \, dx$$

QUINDI ABBIAMO :

$$\int \cos^2 x \, dx = \operatorname{sen} x \cos x + x - \int \cos^2 x \, dx \rightarrow$$

$$\rightarrow \int \cos^2 x \, dx + \int \cos^2 x \, dx = \operatorname{sen} x \cos x + x \rightarrow$$

$$\rightarrow 2 \int \cos^2 x \, dx = \operatorname{sen} x \cos x + x$$

$$\rightarrow \int \cos^2 x \, dx = \boxed{\frac{1}{2} \operatorname{sen} x \cos x + \frac{1}{2} x + k}$$

ALTRO MODO: $\int \cos^2 x dx = \frac{1}{2} \int 2\cos^2 x - 1 + 1 \, dx = \frac{1}{2} \int \cos 2x + \frac{1}{2} \int 1 =$

$= \frac{1}{4} \operatorname{sen} 2x + \frac{1}{2} x + k = \frac{1}{2} \operatorname{sen} x \cos x + \frac{1}{2} x + k$

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