

### 13. $\int \cos^4 x \, dx$

<http://www.karlin.mff.cuni.cz/~kuncova/>, [kunck6am@natur.cuni.cz](mailto:kunck6am@natur.cuni.cz)

Užijeme vzorec  $\cos^2 x = \frac{1+\cos 2x}{2}$

$$\begin{aligned} \int \cos^4 x \, dx &= \int (\cos^2 x)^2 \, dx = \int \left( \frac{1 + \cos 2x}{2} \right)^2 \, dx = \frac{1}{4} \int (1 + 2 \cos 2x + \cos^2 2x) \, dx = \\ &= \frac{1}{4} \int \left( 1 + 2 \cos 2x + \frac{1 + \cos 4x}{2} \right) \, dx \stackrel{C}{=} \frac{1}{4}x + \frac{1}{4} \sin 2x + \frac{1}{8}x + \frac{1}{32} \sin 4x = \frac{3}{8}x + \frac{1}{4} \sin 2x + \frac{1}{32} \sin 4x \end{aligned}$$