$$I_n = \int \cos^n(x)\,dx$$

per partes:

$$I_n = \int \cos(x)\cdot\cos^{n-1}(x)\,dx = \left[\begin{array}{ll} f=\cos^{n-1}(x) & g'=\cos(x) \\ f'=(n-1)\cos^{n-2}(x)(-\sin(x)) & g=+\sin(x) \end{array}\right] =$$

$$= +\sin(x)\cos^{n-1}(x) + (n-1)\int \cos^{n-2}(x)\underbrace{\sin^2(x)}_{1-\cos^2(x)}\,dx =$$

$$= +\sin(x)\cos^{n-1}(x) + (n-1)\left[\underbrace{\int \cos^{n-2}(x) - \cos^n(x)\,dx}_{I_{n-2} - I_{n\cancel{-2}}}\right]$$

Opíšu rovnici:

tady se ty chyby vyrušily

$$I_n = +\sin(x)\cos^{n-1}(x) \cancel{-} (n-1) I_n \; \overset{-}{\cancel{+}} \; (n-1) I_{n-2}$$

$$I_n \overset{-}{\cancel{+}} (n-1) I_n = \quad '' \quad \_\_\_\_$$

jediná změna ve výsledku

$$(\cancel{2}-n) I_n = \_\_\_\_ \quad '' \quad \_\_\_\_ \quad \cancel{\text{nebo} + \frac{n-1}{n-2}}$$

$$\boxed{I_n = \frac{+\sin(x)\cos^{n-1}(x)}{(\cancel{2}-n)} \; \overset{-}{\cancel{+}} \; \cancel{\frac{n-1}{2-n}} \; I_{n-2}}$$

rekurentní formule

$$I_0 = \int 1 \, dx = x \qquad I_2 = \ldots \text{ dosadit } \cancel{n=0} \; n=2$$

$$I_1 = \int \cos(x) \, dx = -\sin(x) \qquad I_3 = \ldots \text{ dosadit } \cancel{n=1} \; n=3$$

I_4