

1.
$$\int \frac{dt}{(1+t^2)^{n+1}} = \frac{1}{2n} \cdot \frac{t}{(1+t^2)^n} + \frac{2n-1}{2n} \int \frac{dt}{(1+t^2)^n}, \quad n \in \mathbb{N}$$

2.
$$\int (\sin x)^{n+1} dx = -\frac{1}{n+1} [(\sin x)^n \cos x - n \int (\sin x)^{n-1}], \quad n \in \mathbb{N}$$

3.
$$\int (\cos x)^{n+1} dx = \frac{1}{n+1} [\sin x (\cos x)^n - n \int (\cos x)^{n-1}], \quad n \in \mathbb{N}$$

4. Podstawienie $\operatorname{tg} x = t$

$$\begin{aligned} dx &= \frac{dt}{1+t^2} \\ \sin^2 x &= \frac{t^2}{1+t^2} \\ \cos^2 x &= \frac{1}{1+t^2} \\ \sin x \cos x &= \frac{t}{1+t^2} \end{aligned}$$

5. Podstawienie $\operatorname{tg} \frac{x}{2} = t$

$$\begin{aligned} dx &= \frac{2}{1+t^2} dt \\ \sin x &= \frac{2t}{1+t^2} \\ \cos x &= \frac{1-t^2}{1+t^2} \end{aligned}$$