

$$\int \sin x \cos \frac{x}{2} dx = 2 \int \sin \frac{x}{2} \cos^2 \frac{x}{2} dx = -2 \cdot 2 \int \cos^2 \frac{x}{2} d\left(\cos \frac{x}{2}\right) = -4 \int t^2 dt = -\frac{4t^3}{3} + C = -\frac{4}{3} \cos^3 \frac{x}{2} + C$$

$$\int \frac{e^{\arctan x}}{1+x^2} dx = \int e^{\arctan x} d(\arctan x) = \int e^t dt = e^t + C = e^{\arctan x} + C$$