

Calcoliamo

$$\int (x+1) \arctan x dx$$

Integrando per parti si ottiene

$$\begin{aligned} \int (x+1) \arctan x dx &= \int \left(\frac{(x+1)^2}{2} \right)' \arctan x \\ &= \frac{(x+1)^2}{2} \arctan x - \frac{1}{2} \int \frac{(x+1)^2}{x^2+1} dx \\ &= \frac{(x+1)^2}{2} \arctan x - \frac{1}{2} \int \frac{x^2+2x+1}{x^2+1} dx \\ &= \frac{(x+1)^2}{2} \arctan x - \frac{1}{2} \int \left(1 + \frac{2x}{x^2+1} \right) dx \\ &= \frac{(x+1)^2}{2} \arctan x - \frac{1}{2} (x + \log(x^2+1)) + C \\ &= \frac{(x+1)^2}{2} \arctan x - \frac{1}{2} x - \frac{1}{2} \log(x^2+1) + C. \end{aligned}$$