Primitive di funzioni elementari

$f(x)$	I	$F(x)$ t.c. $F'(x) = f(x), \forall x \in I$
x^n , $(n \in \mathbb{Z}\setminus\{-1\})$	$\mathbb{R}_+$, $\mathbb{R}_-$, $\mathbb{R}$ (se $n \geq 0$)	$\frac{x^{n+1}}{n+1}$
x^α, $(\alpha \in \mathbb{R}\setminus\{-1\})$	$\mathbb{R}_+$	$\frac{x^{\alpha+1}}{\alpha+1}$
e^x	$\mathbb{R}$	e^x
a^x	$\mathbb{R}$	$\frac{a^x}{\log a}$
$\frac{1}{x}$	$\mathbb{R}_+, \mathbb{R}_-$	$\log \lvert x \rvert$
$\sinh x$	$\mathbb{R}$	$\cosh x$
$\cosh x$	$\mathbb{R}$	$\sinh x$
$\frac{1}{\cosh^2 x}$	$\mathbb{R}$	$\tanh x$
$\frac{1}{\sqrt{1+x^2}}$	$\mathbb{R}$	$\sinh^{-1} x$
$\frac{1}{\sqrt{x^2-1}}$	$\{x > 1\}$	$\cosh^{-1} x$
$\frac{1}{1-x^2}$	$\{\lvert x \rvert < 1\}$	$\tanh^{-1} x$
$\sin x$	$\mathbb{R}$	$-\cos x$
$\cos x$	$\mathbb{R}$	$\sin x$
$\frac{1}{\cos^2 x}$	$\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) + n\pi \ (n \in \mathbb{Z})$	$\tan x$
$-\frac{1}{\sin^2 x}$	$\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) + n\pi \ (n \in \mathbb{Z})$	$\operatorname{cotan} x$
$\frac{1}{\sqrt{1-x^2}}$	$\{\lvert x \rvert < 1\}$	$\operatorname{Arcsen} x$
$\frac{1}{1+x^2}$	$\mathbb{R}$	$\operatorname{Arctan} x$

Alcune formule utili nel calcolo di primitive[1]

$$\sinh^{-1} x = \log(x + \sqrt{x^2+1}) , \qquad \cosh^{-1} x = \log(x + \sqrt{x^2-1}) \tag{1}$$

$$\begin{cases} \operatorname{Arccos} x + \operatorname{Arcsen} x = \frac{\pi}{2} , & (\text{rami principali} : \operatorname{Arcsen} 0 = 0 , \quad \operatorname{Arccos} 0 = \frac{\pi}{2}) \\ \operatorname{Arccot} x + \operatorname{Arctan} x = \frac{\pi}{2} , & (\text{rami principali} : \operatorname{Arctan} 0 = 0 , \quad \operatorname{Arccot} 0 = \frac{\pi}{2}) \end{cases} \tag{2}$$

$$\begin{cases} 2 \operatorname{Arctan}(x + \sqrt{x^2-1}) = \pi - \operatorname{Arcsen} \frac{1}{x} , & \forall\ x \geq 1 \\ \operatorname{Arctan} x = \frac{\pi}{2} - \operatorname{Arctan} \frac{1}{x} , & \forall\ x > 0 \end{cases} \tag{3}$$

$$t = \tan \frac{x}{2} \quad \Longrightarrow \quad x = 2 \arctan t , \qquad \begin{cases} \operatorname{sen} x = \frac{2t}{1+t^2} \\ \cos x = \frac{1-t^2}{1+t^2} \end{cases} , \qquad dx = \frac{2}{1+t^2} dt \tag{4}$$

[1] Per (1) e (3), si veda [C], rispettivamente, Proposizione 3.11 ed Es 7.6. Le (2) e (4) sono elementari.