Formulário

- **Primitivas imediatas e quase-imediatas**

  Seja $u = u(x)$ uma função real de variável real x.

  1. $Pk = kx + C, \quad k \in \mathbb{R}$
  2. $P(\frac{u'}{u}) = \ln|u| + C$
  3. $P(u'u^n) = \frac{u^{n+1}}{n+1} + C, \quad n \in \mathbb{R} \setminus \{-1\}$
  4. $P(u'e^u) = e^u + C, \quad P(u'a^u) = \frac{a^u}{\ln a} + C, \quad a \in \mathbb{R}^+ \setminus \{1\}$
  5. $P(u' \sin u) = -\cos u + C$
  6. $P(u' \cos u) = \sin u + C$
  7. $P(u' \sec^2 u) = \tan u + C$
  8. $P(u' \csc^2 u) = -\cot u + C$
  9. $P\left(\frac{u'}{\sqrt{1-u^2}}\right) = \arcsin u + C, \quad P\left(\frac{u'}{\sqrt{a^2-u^2}}\right) = \arcsin \frac{u}{a} + C$
  10. $P\left(\frac{u'}{1+u^2}\right) = \arctan u + C, \quad P\left(\frac{u'}{a^2+u^2}\right) = \frac{1}{a} \arctan \frac{u}{a} + C$

- **Algumas substituições**

Função (com)	$\mathbf{t = g^{-1}(x)}$	$\mathbf{x = g(t)}$	$\mathbf{g'(t)}$
$\sqrt{a^2 - x^2}$	$t = \arcsin \frac{x}{a}$	$x = a \sin t$	$x' = a \cos t$
$\sqrt{a^2 + x^2}$	$t = \arctan \frac{x}{a}$	$x = a \tan t$	$x' = a \sec^2 t$
e^{kx}	$t = e^x$	$x = \ln t$	$x' = \frac{1}{t}$
$\ln^k x$	$t = \ln x$	$x = e^t$	$x' = e^t$
$R(\sin x, \cos x)$	$t = \tan \frac{x}{2}$	$x = 2 \arctan t$	$x' = \frac{2}{1+t^2}$
$R(\sin x) \cos x$	$t = \sin x$	$x = \arcsin t$	$x' = \frac{1}{\sqrt{1-t^2}}$
$R(\cos x) \sin x$	$t = \cos x$	$x = \arccos t$	$x' = \frac{-1}{\sqrt{1-t^2}}$
$R(x, \sqrt{ax^2 + bx + c})$	$\sqrt{ax^2 + bx + c} = \sqrt{a}x + t$, $a > 0$		
	$\sqrt{ax^2 + bx + c} = \sqrt{c} + tx$, $c > 0$		
	$\sqrt{ax^2 + bx + c} = (x - \alpha)t$, α raíz simples de $ax^2 + bx + c$		