Universidade do Minho

Introdução aos Sistemas Dinâmicos

MIEInformática

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Dep. de Matemática e Aplicações

## Primitivas Imediatas

Na lista de primitivas que se segue,  $f:I\longrightarrow \mathbb{R}$  é uma função derivável no intervalo I e  $\mathcal C$  denota uma constante real arbitrária.

1. 
$$\int a \, dx = ax + \mathcal{C}$$

3. 
$$\int \frac{f'(x)}{f(x)} dx = \ln|f(x)| + C$$

5. 
$$\int f'(x)\cos f(x) dx = \operatorname{sen}(f(x)) + \mathcal{C}$$

7. 
$$\int \frac{f'(x)}{\cos^2(f(x))} dx = \operatorname{tg}(f(x)) + C$$

9. 
$$\int f'(x) \operatorname{tg} f(x) dx = -\ln|\cos(f(x))| + 0$$

11. 
$$\int \frac{f'(x)}{\cos(f(x))} dx = \ln \left| \frac{1}{\cos(f(x))} + \operatorname{tg} f \right| + C$$

13. 
$$\int \frac{f'(x)}{\sqrt{1 - f^2(x)}} dx = \arcsin(f(x)) + C$$

15. 
$$\int \frac{f'(x)}{1 + f^2(x)} dx = \operatorname{arctg}(f(x)) + C$$

17. 
$$\int f'(x) \operatorname{ch}(f(x)) dx = \operatorname{sh}(f(x)) + \mathcal{C}$$

19. 
$$\int \frac{f'(x)}{\operatorname{ch}^2(f(x))} dx = \operatorname{th}(f(x)) + \mathcal{C}$$

**21.** 
$$\int \frac{f'(x)}{\sqrt{f^2(x)+1}} dx = \operatorname{argsh}(f(x)) + C$$

23. 
$$\int \frac{f'(x)}{1 - f^2(x)} dx = \operatorname{argth}(f(x)) + C$$

2. 
$$\int f'(x)f^{\alpha}(x) dx = \frac{f^{\alpha+1}(x)}{\alpha+1} + \mathcal{C} \ (\alpha \neq -1)$$

**4.** 
$$\int a^{f(x)} f'(x) dx = \frac{a^{f(x)}}{\ln a} + \mathcal{C} \ (a \in \mathbb{R}^+ \setminus \{1\})$$

6. 
$$\int f'(x) \operatorname{sen} f(x) dx = -\cos f(x) + C$$

8. 
$$\int \frac{f'(x)}{\operatorname{sen}^2(f(x))} dx = -\cot(f(x)) + C$$

9. 
$$\int f'(x) \operatorname{tg} f(x) dx = -\ln|\cos(f(x))| + C$$
 10. 
$$\int f'(x) \operatorname{cotg} f(x) dx = \ln|\sin(f(x))| + C$$

11. 
$$\int \frac{f'(x)}{\cos(f(x))} dx = \ln \left| \frac{1}{\cos(f(x))} + \operatorname{tg} f \right| + \mathcal{C} \quad 12. \int \frac{f'(x)}{\sin(f(x))} dx = \ln \left| \frac{1}{\sin(f(x))} - \cot(f(x)) \right| + \mathcal{C}$$

14. 
$$\int \frac{-f'(x)}{\sqrt{1-f^2(x)}} dx = \arccos(f(x)) + C$$

16. 
$$\int \frac{-f'(x)}{1+f^2(x)} dx = \operatorname{arccotg}(f(x)) + C$$

18. 
$$\int f'(x)\operatorname{sh}(f(x))\,dx = \operatorname{ch}(f(x)) + \mathcal{C}$$

**20.** 
$$\int \frac{f'(x)}{\sinh^2(f(x))} dx = -\coth(f(x)) + \mathcal{C}$$

**22**. 
$$\int \frac{f'(x)}{\sqrt{f^2(x)-1}} dx = \operatorname{argch}(f(x)) + C$$

**24.** 
$$\int \frac{f'(x)}{1 - f^2(x)} dx = \operatorname{argcoth}(f(x)) + C$$