Universidade do Minho
Escola de Ciências
DMat

Cálculo
LCC
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Formulário 4 - 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. $\displaystyle\int a\,dx = ax + \mathcal{C}$

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

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

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

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

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

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

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

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

10. $\displaystyle\int f'(x)\operatorname{cotg}(f(x))\,dx = \ln|\operatorname{sen}(f(x))| + \mathcal{C}$

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

12. $\displaystyle\int \frac{f'(x)}{\operatorname{sen}(f(x))}\,dx = \ln\left|\frac{1}{\operatorname{sen}(f(x))} - \operatorname{cotg}(f(x))\right| + \mathcal{C}$

13. $\displaystyle\int \frac{f'(x)}{\sqrt{1-f^2(x)}}\,dx = \operatorname{arcsen}(f(x)) + \mathcal{C}$

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

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

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

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

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

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

20. $\displaystyle\int \frac{f'(x)}{\operatorname{sh}^2(f(x))}\,dx = -\operatorname{coth}(f(x)) + \mathcal{C}$

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

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

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

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