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Tabelas

Tabela de derivadas

$$f(x) = x^a \Rightarrow f'(x) = ax^{a-1}$$

$$f(x) = a^x \Rightarrow f'(x) = a^x \ln a \qquad\qquad f(x) = e^x \Rightarrow f'(x) = e^x$$

$$f(x) = u(x)^{v(x)} \Rightarrow f'(x) = u(x)^{v(x)} \left[v'(x) \ln u(x) + v(x) \frac{u'(x)}{u(x)} \right]$$

$$f(x) = \log_a x \Rightarrow f'(x) = \frac{1}{x \ln a} = \frac{1}{x} \log_a e \qquad f(x) = \ln x \Rightarrow f'(x) = \frac{1}{x}$$

$$f(x) = \operatorname{sen} x \Rightarrow f'(x) = \cos x \qquad\qquad f(x) = \cos x \Rightarrow f'(x) = -\operatorname{sen} x$$

$$f(x) = \operatorname{tg} x \Rightarrow f'(x) = \sec^2 x \qquad\qquad f(x) = \operatorname{cotg} x \Rightarrow f'(x) = -\operatorname{cosec}^2 x$$

$$f(x) = \sec x \Rightarrow f'(x) = \sec x \operatorname{tg} x \qquad\qquad f(x) = \operatorname{cosec} x \Rightarrow f'(x) = -\operatorname{cosec} x \operatorname{cotg} x$$

$$f(x) = \operatorname{arc\,sen} x \Rightarrow f'(x) = \frac{1}{\sqrt{1-x^2}} \qquad\qquad f(x) = \operatorname{arc\,cos} x \Rightarrow f'(x) = -\frac{1}{\sqrt{1-x^2}}$$

$$f(x) = \operatorname{arc\,tg} x \Rightarrow f'(x) = \frac{1}{1+x^2} \qquad\qquad f(x) = \operatorname{arc\,cotg} x \Rightarrow f'(x) = -\frac{1}{1+x^2}$$

$$f(x) = \operatorname{arc\,sec} x \Rightarrow f'(x) = \frac{1}{|x|\sqrt{x^2-1}} \qquad\qquad f(x) = \operatorname{arc\,cosec} x \Rightarrow f'(x) = -\frac{1}{|x|\sqrt{x^2-1}}$$

Tabela de integrais básicas

1. $\int dx = x + C$

2. $\int x^a dx = \frac{x^{a+1}}{a+1} + C \ \ (a \neq -1)$

3. $\int x^{-1} dx = \ln|x| + C$

4. $\int a^x dx = \frac{a^x}{\ln a} + C$

5. $\int e^x dx = e^x + C$

6. $\int \frac{1}{x^2+a^2} dx = \frac{1}{a} \operatorname{arctg} \frac{x}{a} + C$

7. $\int \frac{1}{a^2-x^2} dx = \frac{1}{2a} \ln \left| \frac{a+x}{a-x} \right| + C \ \ (a \neq 0)$

8. $\int \frac{1}{x^2-a^2} dx = \frac{1}{2a} \ln \left| \frac{a-x}{a+x} \right| + C \ \ (a \neq 0)$

9. $\int \frac{1}{\sqrt{x^2+a}} dx = \ln \left| x + \sqrt{x^2+a} \right| + C \ \ (a \neq 0)$

10. $\int \frac{1}{\sqrt{a^2-x^2}} dx = \operatorname{arcsen} \frac{x}{a} + C \ \ (a > 0)$

11. $\int \operatorname{sen} x \, dx = -\cos x + C$

12. $\int \cos x \, dx = \operatorname{sen} x + C$

13. $\int \operatorname{tg} x \, dx = -\ln|\cos x| + C$

14. $\int \operatorname{cotg} x \, dx = \ln|\operatorname{sen} x| + C$

15. $\int \sec x \, dx = \ln|\operatorname{tg} x + \sec x| + C$

16. $\int \operatorname{cosec} x \, dx = \ln|\operatorname{cosec} x - \operatorname{cotg} x| + C$

17. $\int \sec^2 x \, dx = \operatorname{tg} x + C$

18. $\int \operatorname{cosec}^2 x \, dx = -\operatorname{cotg} x + C$

19. $\int \sec x \operatorname{tg} x \, dx = \sec x + C$

20. $\int \operatorname{cosec} x \operatorname{cotg} x \, dx = -\operatorname{cosec} x + C$

21. $\int \operatorname{sen}^2 x \, dx = \frac{1}{2}(x - \operatorname{sen} x \cos x) + C$

22. $\int \cos^2 x \, dx = \frac{1}{2}(x + \operatorname{sen} x \cos x) + C$