

TEOREMA FUNDAMENTAL DO CÁLCULO

1. Determinar $\int_0^2 x dx$.
2. Calcular $\int_1^3 (x^2 + 4) dx$.
3. Calcular $\int_1^4 \frac{1}{2\sqrt{x}} dx$.
4. Calcular a integral $\int_0^4 f(x) dx$,
onde $f(x) = \begin{cases} x^2, & \text{se } 0 \leq x \leq 2 \\ 2x, & \text{se } 2 < x \leq 4 \end{cases}$.
5. Calcular a integral $\int_0^2 \frac{x}{\sqrt{x^2+1}} dx$.
6. Calcular $\int_0^1 e^x dx$.
7. Calcular $\int_1^2 \frac{dx}{x}$.
8. Calcular $\int_0^\pi \text{sen } x dx$.
9. Calcular $\int_0^\pi \text{cos } x dx$.

INTEGRAIS INDEFINIDAS E IMEDIATAS

10. Calcular $\int_0^\pi (x + \text{sen } x) dx$.
11. Calcular $\int_1^2 (e^x + 3) dx$.
12. Calcular a integral $\int_0^6 f(x) dx$,
onde $f(x) = \begin{cases} x^2, & \text{se } 0 \leq x \leq 3 \\ 2x, & \text{se } 3 < x < 6 \\ 5, & \text{se } x = 6 \end{cases}$
13. Calcular $\int (x^3 + \text{cos } x) dx$.
14. Calcular $\int (e^{2x} + x^2 + \text{sen } x) dx$.
15. Calcular $\int \frac{dx}{x^2+1}$
16. Calcular $\int (7x^4 + \text{sec}^2 x) dx$.
17. Calcular $\int \left(3e^x + \frac{1}{4x} - \text{sen } x \right) dx$.
18. Calcular $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \left(3e^x + \frac{1}{4x} - \text{sen } x \right) dx$
19. Calcular $\int_1^4 (\sqrt[2]{x} + x) dx$.

RESPOSTAS

1. 2
2. $\frac{50}{3}$
3. 1
4. $\frac{44}{3}$
5. $\sqrt{5} - 1$
6. $e - 1$
7. $\ln 2$
8. 2
9. 0
10. $\frac{\pi^2}{2} + 2$
11. $e^2 - e + 3$
12. 36
13. $\frac{x^4}{4} + \text{sen } x + C$
14. $\frac{e^{2x}}{2} + \frac{x^3}{3} - \text{cos } x + C$
15. $\text{arc } \text{tg } x + C$
16. $7 \frac{x^5}{5} + \text{tg } x + C$
17. $3e^x + \frac{1}{4} \ln|x| + \text{cos } x + C$
18. $3 \left(e^{\frac{\pi}{2}} - e^{\frac{\pi}{4}} \right) + \frac{1}{4} \left(\ln \frac{\pi}{2} - \ln \frac{\pi}{4} \right) - \frac{\sqrt{2}}{2}$
19. $\frac{73}{6}$