Cálculo A

Integração por substituição

Calcule as integrais usando o método da substituição

1. $\int 3x(1-2x^2)^{10}\,dx$
2. $\int \frac{x^2}{(x^3+5)^4}\,dx$
3. $\int \frac{t\,dt}{\sqrt{2t^2+1}}$
4. $\int x^2\sqrt[3]{2-4x^3}\,dx$
5. $\int \frac{x+1}{(x^2+2x+5)^2}\,dx$
6. $\int \sin\frac{t}{3}\,dt$
7. $\int \frac{\cos\sqrt{x}}{\sqrt{x}}\,dx$
8. $\int \frac{x^3-1}{(x^4-4x)^{2/3}}\,dx$
9. $\int \frac{1}{x^3}\left(1+\frac{1}{x^2}\right)^{5/3}\,dx$
10. $\int (2-t^2)\sqrt[4]{6t-t^3}\,dt$
11. $\int e^{2x+5}\,dx$
12. $\int \frac{x}{x^2+4}\,dx$
13. $\int 2\sin x\,\cos^2 x\,dx$
14. $\int e^x\,\cos e^x\,dx$
15. $\int e^{\sin x}\,\cos x\,dx$
16. $\int \frac{\sec^2 x}{\tan x}\,dx$
17. $\int x^2\sqrt{1+x}\,dx$
18. $\int \frac{1-\sin x}{x+\cos x}\,dx$
19. $\int e^x\sqrt{1+4e^x}\,dx$
20. $\int e^{2x}\sqrt{1+4e^x}\,dx$

Lista 15 - Resposta

1. $-\frac{3}{44}(1-2x^2)^{11} + C$

2. $-\frac{1}{9}\frac{1}{(x^3+5)^3} + C$

3. $\frac{1}{2}\sqrt{2x^2+1} + C$

4. $-\frac{1}{16}(2-4x^3)^{4/3} + C$

5. $-\frac{1}{2}\frac{1}{x^2+2x+5} + C$

6. $-3\cos\frac{x}{3} + C$

7. $2\operatorname{sen}\sqrt{x} + C$

8. $\frac{3}{4}\sqrt[3]{x^4-4x} + C$

9. $-\frac{3}{16}\left(1+\frac{1}{x^2}\right)^{8/3} + C$

10. $\frac{4}{15}(6x-x^3)^{5/4} + C$

11. $\frac{1}{2}e^{2x+5} + C$

12. $\frac{1}{2}\ln(x^2+4) + C$

13. $-\frac{2}{3}\cos^3 x + C$

14. $\operatorname{tg} e^x + C$

15. $e^{\operatorname{tg} x} + C$

16. $\ln|\operatorname{tg} x| + C$

17. $\frac{2}{7}(1+x)^{7/2} - \frac{4}{5}(1+x)^{5/2} + \frac{2}{3}(1+x)^{3/2} + C$

18. $\ln|x + \operatorname{arc} x| + C$

19. $\frac{1}{6}(1+4e^x)^{3/2} + C$

20. $\frac{1}{40}(1+4e^x)^{5/2} - \frac{1}{24}(1+4e^x)^{3/2} + C$