

Cálculo 2 - Lista 11

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. $\int \frac{x+1}{\sqrt{(x^2+2x+5)^2}} dx$

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. $\int (2 - t^2)^4 \sqrt[4]{6t - t^3} dt$

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. $\int e^{2x} \sqrt{1+4e^x} dx$

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

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

7. $2 \sin \sqrt{x} + C$

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

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

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

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. $\sin e^x + C$

15. $e^{\sin x} + C$

16. $\ln |\tan x| + C$

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

18. $\ln |x + \cos x| + C$

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

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

resposta

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

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

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

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