

Resolva as integrais pelo método da integração por partes

1. $\int x \cdot e^{-x} dx$

2. $\int x \cdot e^{3x} dx$

3. $\int x^2 \cdot e^x dx$

4. $\int x^2 \cdot e^{-2x} dx$

5. $\int x \cos 3x dx$

6. $\int x^2 \sin x dx$

7. $\int \sqrt{x} \cdot \ln x dx$

8. $\int \frac{\ln x}{\sqrt{x}} dx$

9. $\int x \cdot \sin(2x-2) dx$

10. $\int x^3 \cdot e^{2x} dx$

11. $\int e^x (x+1)^2 dx$

12. $\int x(3+4x)^{1/3} dx$

13. $\int_0^{\ln 2} x \cdot e^x \cdot dx$

14. $\int r \cdot e^{\frac{r}{2}} dr$

15. $\int_0^1 \frac{y}{e^{2y}} dy$

16. $\int_1^4 \sqrt{t} \ln t dt$

Respostas :

1. $-x e^{-x} - e^{-x} + c$

2. $\frac{x e^{3x}}{3} - \frac{e^{3x}}{9} + c$

3. $x^2 e^x - 2x e^x + 2e^x + c$

4. $-\frac{x^2 e^{-2x}}{2} - \frac{x e^{-2x}}{2} - \frac{e^{-2x}}{4} + c$

5. $\frac{x \sin 3x}{3} + \frac{\cos 3x}{9} + c$

6. $-x^2 \cos x + 2x \sin x + 2 \cos x + c$

7. $\frac{2x^{\frac{3}{2}} \cdot \ln x}{3} - \frac{4x^{\frac{3}{2}}}{9} + c$

8. $2\sqrt{x} \cdot \ln x - 4\sqrt{x} + c$

9. $-\frac{x}{2} \cos(2x-2) + \frac{1}{4} \sin(2x-2) + c$

10. $\frac{x^3 e^{2x}}{2} - \frac{3x^2 e^{2x}}{4} + \frac{3x e^{2x}}{4} - \frac{3e^{2x}}{8} + c$

11. $e^x x^2 + e^x + c$

12. $\frac{3(3+4x)^{7/3}}{112} - \frac{9(3+4x)^{4/3}}{64} + c$

13. $2 \ln 2 - 1$

14. $2r e^{\frac{r}{2}} - 4e^{\frac{r}{2}} + c$

15. $-\frac{1}{4} e^{-2} + \frac{1}{4}$

16. $\frac{16}{3} \ln 2 - \frac{28}{9}$