II LISTA DE EXERCICIOS INTEGRAL – CALCULO II
CIÊNCIA DA COMPUTAÇÃO – DOM HELDER ESCOLA SUPERIOR
PROF. FISCHER STEFAN

1-15 Calcule a integral.

1. $\int xe^{2x}\,dx$

2. $\int x\cos x\,dx$

3. $\int x\,\mathrm{sen}\,4x\,dx$

4. $\int x^2\cos 3x\,dx$

5. $\int x^2\,\mathrm{sen}\,ax\,dx$

6. $\int \theta\,\mathrm{sen}\,\theta\cos\theta\,d\theta$

7. $\int t^2\ln t\,dt$

8. $\int e^{-\theta}\cos 3\theta\,d\theta$

9. $\int_0^1 te^{-1}\,dt$

10. $\int_1^4 \ln\sqrt{x}\,dx$

11. $\int_0^{\pi/2} x\cos 2x\,dx$

12. $\int_0^1 x^2e^{-x}\,dx$

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

14. $\int \mathrm{sen}(\ln x)\,dx$

15. $\int x\,\mathrm{tg}^{-1}x\,dx$

GABARITO

1. $\frac{1}{2}xe^{2x} - \frac{1}{4}e^{2x} + C$

2. $x \operatorname{sen} x + \cos x + C$

3. $-\frac{1}{4}x \cos 4x + \frac{1}{16}\operatorname{sen} 4x + C$

4. $\frac{1}{3}x^2 \operatorname{sen} 3x + \frac{2}{9}x \cos 3x - \frac{2}{27} \operatorname{sen} 3x + C$

5. $-\dfrac{x^2}{a} \cos ax + \dfrac{2x}{a^2}\operatorname{sen} ax + \dfrac{2}{a^3} \cos ax + C$

6. $\frac{1}{8}(\operatorname{sen} 2\theta - 2\theta \cos 2\theta) + C$

7. $\frac{1}{9}t^3 (3 \ln t - 1) + C$

8. $\frac{1}{10}e^{-\theta} (3 \operatorname{sen} 3\theta - \cos 3\theta) + C$

9. $1 - 2/e$

10. $2 \ln 4 - \frac{3}{2}$

11. $-\frac{1}{2}$

12. $2 - 5/e$

13. $\frac{1}{2}e^{x^2} (x^2 - 1) + C$

14. $\frac{1}{2}x [\operatorname{sen}(\ln x) - \cos (\ln x)] + C$

15. $\frac{1}{2} (x^2 \operatorname{tg}^{-1} x + \operatorname{tg}^{-1} x - x) + C$