Examen de Matemáticas 1º de Bachillerato

Mayo 2004

Problema 1

Calcular las siguientes integrales:

1. $\int \frac{\ln x}{x}\,dx$
2. $\int \frac{3x^2}{2x^3-1}\,dx$
3. $\int e^x \sin e^x\,dx$
4. $\int \frac{2x}{1+x^2}\,dx$
5. $\int \frac{1}{1+x^2}\,dx$
6. $\int 2x^2 e^{x^3-1}\,dx$
7. $\int x 2^{x^2+1}\,dx$
8. $\int \frac{2x+1}{x^2+x-1}\,dx$
9. $\int \frac{2x^2}{\cos^2(x^3)}\,dx$
10. $\int x\sqrt{x^2-1}\,dx$

Solución:

1. $\int \frac{\ln x}{x}\,dx = \frac{(\ln x)^2}{2} + C$
2. $\int \frac{3x^2}{2x^3-1}\,dx = \frac{\ln(2x^3-1)}{2} + C$
3. $\int e^x \sin e^x\,dx = -\cos e^x + C$
4. $\int \frac{2x}{1+x^2}\,dx = \ln(1+x^2) + C$
5. $\int \frac{1}{1+x^2}\,dx = \arctan x + C$

6. $\int 2x^2 e^{x^3-1}\,dx = \dfrac{2e^{x^3-1}}{3} + C$

7. $\int x2^{x^2+1}\,dx = \dfrac{2^{x^2}}{\ln 2} + C$

8. $\int \dfrac{2x+1}{x^2+x-1}\,dx = \ln|x^2+x-1| + C$

9. $\int \dfrac{2x^2}{\cos^2(x^3)}\,dx = \dfrac{2\tan x^3}{3} + C$

10. $\int x\sqrt{x^2-1}\,dx = \dfrac{(x^2-1)^{3/2}}{3} + C$