BLOQUE III: CÁLCULO INTEGRAL.

TEMA 8_1
INTEGRAL INDEFINIDA.
CÁLCULO DE PRIMITIVAS

EJERCICIOS

Ejercicio 1. Calcular, como inmediatas, las integrales que se indican.

1. $\int \sqrt[3]{x^4}\, dx$
2. $\int \left(1+x^2\right)^3 x\, dx$
3. $\int \frac{x}{\sqrt{x^2-3}}\, dx$
4. $\int \frac{x+3}{\left(x^2+6x\right)^{1/3}}\, dx$
5. $\int \sqrt{1+\operatorname{sen} x}\cos x\, dx$
6. $\int \cos^3 x\ \operatorname{sen} x\, dx$
7. $\int \frac{5\ln x}{x}\, dx$
8. $\int e^{x+5}\, dx$
9. $\int \frac{a^x}{b^x}\, dx$
10. $\int x e^{x^2}\, dx$
11. $\int \frac{e^{\sqrt{x}}}{\sqrt{x}}\, dx$
12. $\int e^{\cos x}\operatorname{sen} x\, dx$
13. $\int e^{3\cos 2x}\operatorname{sen} 2x\, dx$
14. $\int \frac{e^{\operatorname{arctg}\ x}}{1+x^2}\, dx$
15. $\int \frac{x}{x^2-1}\, dx$
16. $\int \frac{x^3}{1+x^4}\, dx$
17. $\int \frac{1}{x\ln x}\, dx$
18. $\int \operatorname{tg}\ x\, dx$
19. $\int \operatorname{cotg} x\, dx$
20. $\int \frac{1}{a+bx}\, dx$
21. $\int \frac{e^x}{1+e^x}\, dx$
22. $\int \frac{e^{1/x^2}}{x^3}\, dx$
23. $\int \frac{5}{\sqrt{1-4x^2}}\, dx$
24. $\int \frac{1}{\sqrt{4-x^2}}\, dx$
25. $\int \frac{\operatorname{sen} x}{\sqrt{4-\cos^2 x}}\, dx$
26. $\int \frac{1}{x\sqrt{1-\ln^2 x}}\, dx$
27. $\int \frac{1}{9+x^2}\, dx$
28. $\int \frac{5}{4+3x^2}\, dx$
29. $\int \frac{\cos x}{1+\operatorname{sen}^2 x}\, dx$
30. $\int \frac{x}{1+x^4}\, dx$
31. $\int 3\operatorname{sen}(4x)\, dx$
32. $\int \left(3x^2-\frac{1}{x}+\frac{1}{x^2}+\frac{3}{1+x^2}-\frac{2}{\sqrt{4-x^2}}+e^{4x}\right) dx$
33. $\int \frac{x+1}{3+x^2}\, dx$
34. $\int \left(\sqrt[3]{x^2}+4\operatorname{sen}(2x)-\frac{2}{\cos^2 x}+e^{\operatorname{sen} x}\cos x\right) dx$

Ejercicio 2. Calcular por partes las siguientes integrales:

1. $\int \ln x \, dx$ 2. $\int \operatorname{arctg} x \, dx$ 3. $\int x^2 \operatorname{sen} x \, dx$
4. $\int x^2\sqrt{1-x}\, dx$ 5. $\int \ln^2 x \, dx$ 6. $\int e^{\operatorname{arcsen} x} \, dx$
7. $\int x\sqrt{1+x}\, dx$ 8. $\int (x+1)^2 e^{2x} \, dx$ 9. $\int x\cos(2x) \, dx$
10. $\int x\ln(x+1) \, dx$ 11. $\int (x^2+x-1)e^x \, dx$

Ejercicio 3. Mediante cambio de variable, calcular las primitivas siguientes.

1. $\int \frac{1+e^x}{1-e^x} \, dx$ 2. $\int \frac{e^{2x}+e^x}{e^{3x}+1} \, dx$ 3. $\int \frac{2^x}{1-4^x} \, dx$
4. $\int \frac{\sqrt{x}-1}{6\left(\sqrt[3]{x}+1\right)} \, dx$ 5. $\int \frac{x^3}{\sqrt{x-1}} \, dx$ 6. $\int \sqrt{x}(1-x)^3 \, dx$
7. $\int \frac{1}{x\sqrt{1-x^2}} \, dx$ 8. $\int \frac{1}{x\sqrt{1+x^2}} \, dx$ 9. $\int \frac{1}{x\sqrt{2-x^2}} \, dx$
10. $\int \frac{1}{x\sqrt{4+x^2}} \, dx$ 11. $\int \frac{1}{x\sqrt{1-3x^2}} \, dx$

Ejercicio 4. Resolver las integrales que se indican.

1. $\int (x-2)\sqrt{1+3x}\, dx$ 2. $\int \frac{x^4}{\left(x^2-1\right)^2} \, dx$ 3. $\int \frac{1+\ln x}{x\ln x} dx$
4. $\int \frac{x+2}{x^2+x+1} dx$ 5. $\int \frac{2}{(2x-1)\sqrt{2x}} dx$ 6. $\int \frac{+1}{x^2(9+x^2)} dx$
7. $\int \frac{x^2}{(x-1)^2} \, dx$ 8. $\int xe^{-x^2/2} \, dx$ 9. $\int \frac{2x+3}{3x+2} \, dx$
10. $\int \frac{x^2}{\sqrt{2-x}} dx$ 11. $\int xe^{2x} \, dx$ 12. $\int \frac{1}{\sqrt{x}+\sqrt[3]{x^2}} \mathrm{dx}$
13. $\int L(2x+1) dx$ 14. $\int arctg(x-3) \, dx$ 15. $\int \frac{x+1}{x^2-4} dx$
16. $\int \frac{4}{x^2+2x+10} dx$ 17. $\int x^2 e^{x^3} \, dx$ 18. $\int \frac{\ln(\ln x)}{x\ln x} \, dx$
20. $\int \frac{x}{\sqrt[3]{1+2x}} dx$ 21. $\int x^2 \operatorname{sen}(2x) \, dx$ 22. $\int \frac{x}{(1-x)\sqrt{1-x}} dx$
23. $\int \frac{1-e^{3x}}{e^{2x}} dx$ 24. $\int x\ln x \, dx$ 25. $\int \frac{1}{(x-1)^2} \, dx$