Calcular las siguientes integrales inmediatas:

1. $\int 4x^5 dx$ $\quad \text{Sol}: \frac{2}{3}x^6 + C$
2. $\int 2\sqrt{x}\ dx$ $\quad \text{Sol}: \frac{4}{3}x\sqrt{x} + C$
3. $\int \frac{1}{5x^3} dx$ $\quad \text{Sol}: -\frac{1}{10x^2} + C$
4. $\int \sqrt{2x^3}\ dx$ $\quad \text{Sol}: \frac{2\sqrt{2}}{5}x^2\sqrt{x} + C$
5. $\int \frac{7}{\cos^2 x} dx$ $\quad \text{Sol}: 7\text{tag}x + C$
6. $\int \frac{\cos x}{3} dx$ $\quad \text{Sol}: \frac{1}{3}senx + C$
7. $\int \frac{4}{\sqrt{1-x^2}} dx$ $\quad \text{Sol}: \text{arcsen}x + C$
8. $\int 10^x\ dx$ $\quad \text{Sol}: \frac{10^x}{\text{Ln}10} + C$
9. $\int -\frac{5}{1+x^2} dx$ $\quad \text{Sol}: -5\,\text{arctag}\,x + C$
10. $\int 3e^x dx$ $\quad \text{Sol}: 3e^x + C$

Calcular , mediante el método de descomposición en sumandos, las siguientes integrales:

11. $\int (1-2x)^4 dx$ $\quad \text{Sol}: \frac{16}{5}x^5 - 8x^4 + 8x^3 - 4x^2 + x + C$
12. $\int \left[(2+\cos x)^2 - \cos^2 x\right] dx$ $\quad \text{Sol}: 4(x + \text{sen}x) + C$
13. $\int (3 + 5x - senx) dx$ $\quad \text{Sol}: \frac{5}{2}x^2 + 3x + \cos x + C$
14. $\int \left(\sqrt{x} - x\right)^3 dx$ $\quad \text{Sol}: \frac{2}{5}x^2\sqrt{x} - x^3 + \frac{6}{7}x^3\sqrt{x} - \frac{1}{4}x^4 + C$
15. $\int \frac{1-\sqrt{x}}{x} dx$ $\quad \text{Sol}: \ln x - 2\sqrt{x} + C$

Calcular, por el método de cambio de variable, las siguientes integrales:

16. $\int \frac{dx}{\sqrt{1-5x}}$ Cambio : $t = 1 - 5x$ Sol : $\frac{-2}{5}\sqrt{1-5x} + C$

17. $\int e^{5x}\, dx$ Cambio : $t = 5x$ Sol : $\frac{e^{5x}}{5} + C$

18. $\int \cos 4x\, dx$ Cambio : $t = 4x$ Sol : $\frac{sen4x}{4} + C$

19. $\int \frac{7x}{\sqrt{1-x^2}}\, dx$ Cambio : $t = 1 - x^2$ Sol : $-7\sqrt{1-x^2} + C$

20. $\int \frac{7}{\sqrt{1-4x^2}}\, dx$ Cambio : $t = 2x$ Sol : $\frac{7}{2} arcsen\, 2x + C$

21. $\int senx.\cos x\, dx$ Cambio : $t = senx$ Sol : $-\frac{\cos 2x}{4} + C$

22. $\int tagx dx$ Cambio : $t = \cos x$ Sol : $-\ln|\cos x| + C$

23. $\int \frac{dx}{x-4}$ Cambio : $t = x - 4$ Sol : $\ln|x - 4| + C$

24. $\int \frac{1+2x}{1+x^2}$ Sol : $arctag\, x + \ln|1 + x^2| + C$

25. $\int \frac{4xdx}{\sqrt{1-4x^2}}$ Cambio : $t = 1 - 4x^2$ Sol : $-\sqrt{1-4x^2} + C$

26. $\int 3^{3x}\, dx$ Cambio : $t = 3x$ Sol : $\frac{3^{3x-1}}{\ln 3} + C$

27. $\int \frac{2\cos x}{5 + 3senx}\, dx$ Cambio : $t = 5 + 3senx$ Sol : $\frac{2}{3}\ln|5 + 3senx| + C$

28. $\int \frac{dx}{\sqrt{25-4x^2}}$ Cambio : $t = \frac{2x}{5}$ Sol : $\frac{1}{2} arcsen \frac{2x}{5} + C$

29. $\int \frac{dx}{x^2 + 2x + 2}$ Cambio : $t = x + 1$ Sol : $arctag(x + 1) + C$

30. $\int \frac{e^{5\sqrt{x}}}{\sqrt{x}}\, dx$ Cambio : $t = \sqrt{x}$ Sol : $\frac{2}{5} e^{5\sqrt{x}} + C$

31. $\int \frac{x+1}{x^2 + 2x + 2}\, dx$ Cambio : $t = x^2 + 2x + 2$ Sol : $\frac{1}{2}\ln|x^2 + 2x + 2| + C$

32. $\int \frac{2senx}{\cos^2 x}\, dx$ Cambio : $t = \cos x$ Sol : $\frac{1}{\cos^2 x} + C$

33. $\int \frac{5\, dx}{\sqrt{1-x^2}\, arcsenx}$ Sol : $5\ln|arcsenx| + C$

34. $\int \frac{x^5}{x^6 + 5}\, dx$ Sol : $\frac{1}{6}\ln(x^6 + 5) + C$

35. $\int \frac{\ln^7 x\, dx}{7x}$ Sol : $\frac{1}{56}\ln^8 x + C$

36. $\int 7^{\text{sen}x}.\cos x\ dx$ $\quad Sol: \dfrac{7^{\text{sen}x}}{\ln 7} + C$

37. $\int \dfrac{\sqrt{1-x}}{\sqrt{1+x}}\ dx$ $\quad Sol: \text{arcsen}x + \sqrt{1 - x^2} + C$

38. $\int \dfrac{1}{x.\ln x}\ dx$ $\quad Sol: \ln(\ln|x|) + C$

39. $\int \dfrac{senx}{\cos^3 x}\ dx$ $\quad Sol: \dfrac{1}{2\cos^2 x} + C$

40. $\int \text{cotg}x\ dx$ $\quad Sol: \ln|senx| + C$

Calcular, mediante el método de integración por partes, las siguientes integrales.

41. $\int x.\cos x\ dx$ $\quad Sol: x.\text{sen}x + \cos x + C$

42. $\int 3x.3^x\ dx$ $\quad Sol: \dfrac{3^{x+1}(x\ln 3 - 1)}{\ln^2 3} + C$

43. $\int x.e^{-x}\ dx$ $\quad Sol: -e^{-x}(1+x) + C$

44. $\int x.\ln x\ dx$ $\quad Sol: \dfrac{x^2(2\ln x - 1)}{4} + C$

45. $\int x^2.\cos 2x\ dx$ $\quad Sol: \dfrac{x^2 sen2x}{2} + \dfrac{x\cos 2x}{2} - \dfrac{sen2x}{4} + C$

46. $\int \dfrac{\ln x}{x^2}\ dx$ $\quad Sol: -\dfrac{1+\ln x}{x} + C$

47. $\int e^x.senx\ dx$ $\quad Sol: \dfrac{e^x.(senx - \cos x)}{2} + C$

48. $\int \text{sen}x.\ln(1+\text{sen}x)\ dx$ $\quad Sol: x + [1 - \ln(1+\text{sen}x)]\cos x + C$

49. $\int \ln^2 x\ dx$ $\quad Sol: x.(\ln^2 x - 2\ln x + 2) + C$

50. $\int arcsenx\ dx$ $\quad Sol: x.\text{arcsen}x + \sqrt{1 - x^2} + C$

Calcular las siguientes integrales:

51. $\int \frac{dx}{x.\cos^2(\ln x)}$ $\quad Sol: \text{tag.}(\ln x) + C$

52. $\int \frac{e^{-4x}dx}{1+e^{-8x}}$ $\quad Sol: -\frac{\text{arctag } e^{-4x}}{4} + C$

53. $\int \frac{a.x^n\ dx}{1+bx^{n+1}}$ $\quad Sol: \frac{a.\ln(1+b.x^{n+1})}{b.(n+1)} + C$

54. $\int \frac{3x\,dx}{(x^2+1)^2}$ $\quad Sol: \frac{-3}{2.(1+x^2)} + C$

55. $\int \frac{x^2\ dx}{1+x^6}$ $\quad Sol: \frac{1}{3}\text{arctag}\,x^3 + C$

56. $\int \frac{dx}{\sqrt{x}.\cos^2(\sqrt{x})}$ $\quad Sol: 2\,\text{tag}\sqrt{x} + C$

57. $\int \frac{(e^{2x}+\sec^2 2x)dx}{e^{2x}+tag\,2x}$ $\quad Sol: \frac{1}{2}\ln(e^{2x}+tag\,2x) + C$

58. $\int \frac{dx}{x.(2+\ln x)^4}$ $\quad Sol: \frac{-1}{3(2+\ln x)^3} + C$

59. $\int \frac{\sqrt{arcsenx}\ dx}{\sqrt{1-x^2}}$ $\quad Sol: \frac{2}{9}\text{arcsenx}.\sqrt{\text{arcsenx}} + C$

60. $\int \frac{e^x\ dx}{(e^x+4)^3}$ $\quad Sol: \frac{-1}{2(e^x+4)^2} + C$

61. $\int \frac{sen2x}{\sqrt{1-sen^4 x}}\,dx$ $\quad Sol: \text{arcsen}(sen^2 x) + C$

62. $\int \frac{e^x+2}{\sqrt{e^x+2x}}\,dx$ $\quad Sol: 2\sqrt{e^x+2x} + C$

63. $\int \frac{dx}{sen^2 x.\sqrt{\text{cotag}\,x}}$ $\quad Sol: -2.\sqrt{\text{cotag}\,x} + C$

64. $\int x^{-1}\text{sen}(\ln x)\,dx$ $\quad Sol: -\cos(\ln x) + C$

65. $\int \frac{\sqrt{x}+\ln x}{x}\,dx$ $\quad Sol: 2\sqrt{x} + \frac{\ln^2 x}{2} + C$

Ejercicios:

1) $\int \frac{x}{x^2-x-2}dx = \frac{2}{3}Ln|x-2| + \frac{1}{3}Ln|x+1|$

2) $\int \frac{x^3}{x^2-x-2}dx = \frac{1}{2}x^2 + x + \frac{8}{3}Ln|x-2| + \frac{1}{3}\ln|x+1| + cte$

3) $\int \frac{1}{x^2-9}dx = \frac{1}{6}Ln|x-3| - \frac{1}{6}Ln|x+3| + cte$

4) $\int \frac{dx}{x^3-3x^2+2x}dx = \frac{1}{2}Ln|x| - Ln|x-1| + \frac{1}{2}Ln|x-2| + cte$

5) $\int \frac{4x^3+2x^2+1}{4x^3-x}dx = x - Ln|x| + Ln|2x-1| + \frac{1}{2}Ln|2x+1| + cte$

6) $\int \frac{5x^2-3}{x^3-x}dx = 3Ln|x| + Ln|x-1| + Ln|x+1| + cte$

7) $\int \frac{4x^4-4x^3+2x^2-1}{4x^3-9x}dx = \frac{x^2}{2} - x + ALn|2x-3| + BLn|2x+3| + cte$

8) $\int \frac{5x^3+2}{x^3-5x^2+4x}dx = 5x + \frac{161}{2}Ln|x-4| - \frac{7}{3}Ln|x-1| + \frac{1}{2}Ln|x| + cte$

9) $\int \frac{5x^3+2}{x^2-5x+6}dx = 137Ln|x-3| - 42Ln|x-2| + \frac{5}{2}x^2 + 25x + cte$

10) $\int \frac{4x^3-7x}{x^4-5x^2+4}dx = \frac{Ln|(x^2-1)(x^2-4)^3|}{2} + cte$

11) $\int \frac{2x+1}{(x-1)^2}dx = 2Ln|x-1| - \frac{3}{x-1} + cte$

12) $\int \frac{3x+7}{x^3-x^2-x+1}dx = Ln|x+1| - Ln|x-1| - \frac{5}{x+1} + cte$

13) $\int \frac{3x-15}{x^3-3x-2}dx = Ln|x+1| - \frac{6}{x+1} - Ln|x-2| + cte$

EJERCICIOS DE RECOPILACIÓN

1) $\int \frac{e^{2x+1}+3e^x-1}{e^{x-1}}dx$

2) $\int \frac{6x^3-4x^2+3x-2}{3(x+2)}dx$

3) $\int \frac{\sqrt[3]{x}-4\sqrt{x}+3x+2}{\sqrt{x}}dx$

4) $\int \frac{Ln\sqrt{x}}{x}dx$

5) $\int \frac{e^x}{4+9e^{2x}}dx$ (t=3e^x/2)

6) $\int \frac{2^{tg\,x}}{\cos^2 x}dx$ (t=tgx)

7) $\int \frac{\sqrt{x}-1}{\sqrt[3]{x}+1}dx$ (t ^{6}=x)

8) $\int \frac{1}{\sqrt{9-6x^2}}dx$ (t=(x√6)/3)

9) $\int (x+1)\,arc\,\mathrm{sen}\,x\,dx$

10) $\int e^{-3x}\cos x\,dx$

11) $\int \cos Lnx\,dx$

12) $\int \frac{\mathrm{sen}^3 x}{\sqrt{\cos x}}dx$

13) $\int \frac{1}{x\ln x}dx$

14) $\int \frac{5x}{x^2+1}dx$

15) $\int \frac{6x}{(2x^2+9)^8}dx$

16) $\int (3x-2)e^{2x-3}dx$

17) $\int \frac{6x^3-4x^2+3x-2}{4+x^2}dx$

18) $\int \frac{5x^3-x+1}{x^3-2x}dx$

19) $\int \frac{2x}{(6x^2+4)}dx$

20) $\int 6xe^{-9x^2+5}dx$

21) $\int \frac{2x^2-8x+1}{2x^2-7x+3}dx$

22) $\int 6x.e^{-9x^2+5}dx$

23) $\int \frac{e^{arctgx}}{1+x^2}\,dx$

24) $\int (\cos 2x + sen^2 x + \cos^2 x)dx$

25) $\int senx\cos^4 x dx$

26) $\int sen^5(8x+2)\cos(8x+2)dx$

27) $\int x\cos(4x-1)dx$

28) $\int \frac{arcsen5x}{\sqrt{1-25x^2}}dx$

29) $\int \frac{sen2x}{1+\cos^2 x}\,dx$

30) $\int \sqrt{1-\ln x}.\frac{dx}{x}$