Guía de Integrales Indefinidas. Matemáticas II

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Integración Inmediata

1. $\int 5a^2x^6dx$
2. $\int (6x^2+8x+3)dx$
3. $\int x(x+a)(x+b)dx$
4. $\int (a+bx^3)^2dx$
5. $\int \sqrt{2px}dx$
6. $\int \frac{dx}{\sqrt[n]{x}}$
7. $\int (nx)^{\frac{1-n}{n}}dx$
8. $\int (a^{\frac{2}{3}}-x^{\frac{2}{3}})^3dx$
9. $\int (\sqrt{x}+1)(x-\sqrt{x}+1)dx$
10. $\int \frac{(x^2+1)(x^2-2)}{\sqrt[3]{x^2}}dx$
11. $\int \frac{(x^m-x^n)^2}{\sqrt{x}}dx$
12. $\int \frac{(\sqrt{a}-\sqrt{x})^4}{\sqrt{ax}}dx$
13. $\int \frac{dx}{x^2+7}$
14. $\int \frac{dx}{x^2-10}$
15. $\int \frac{dx}{\sqrt{4+x^2}}$
16. $\int \frac{dx}{\sqrt{8-x^2}}$
17. $\int \frac{\sqrt{2+x^2}-\sqrt{2-x^2}}{\sqrt{4-x^4}}dx$
18. $\int \tan^2 xdx$
19. $\int \tanh^2 xdx$
20. $\int \cot^2 xdx$
21. $\int \frac{1}{\tanh^2 x}dx$
22. $\int 3^x e^x dx$

Integración mediante una sustitución simple

1. $\int \frac{dx}{\sqrt{5x-2}}$
2. $\int \frac{x}{\sqrt{1+x^4}}dx$
3. $\int x^2e^{x^3}dx$
4. $\int \frac{a}{a-x}dx$

5. $\int \frac{2x+3}{2x+1}dx$
6. $\int \frac{1-3x}{3+2x}dx$
7. $\int \frac{xdx}{a+bx}$
8. $\int \frac{ax+b}{\alpha x+\beta}dx$
9. $\int \frac{x^2+1}{x-1}dx$
10. $\int \frac{x^2+5x+7}{x+3}dx$
11. $\int \frac{x^4+x^2+1}{x-1}dx$
12. $\int \left(a+\frac{b}{x-a}\right)dx$
13. $\int \frac{x}{(x+1)^2}dx$
14. $\int \frac{b}{\sqrt{1-y}}dy$
15. $\int \sqrt{a-bx}dx$
16. $\int \frac{x}{\sqrt{x^2+1}}dx$
17. $\int \frac{\sqrt{x}+\ln x}{x}dx$
18. $\int \frac{dx}{3x^2+5}$
19. $\int \frac{dx}{7x^2-8}$
20. $\int \frac{dx}{(a+b)-(a-b)x^2}, \quad (0<b<a)$
21. $\int \frac{x^2}{x^2+2}dx$
22. $\int \frac{x^3}{a^2-x^2}dx$
23. $\int \frac{x^2-5x+6}{x^2+4}dx$
24. $\int \frac{dx}{\sqrt{7+8x^2}}$
25. $\int \frac{dx}{\sqrt{7-5x^2}}$
26. $\int \frac{2x-5}{3x^2-2}dx$
27. $\int \frac{3-2x}{5x^2+7}dx$
28. $\int \frac{3x+1}{\sqrt{5x^2+1}}dx$
29. $\int \frac{x+3}{\sqrt{x^2-4}}dx$
30. $\int \frac{xdx}{x^2-5}$
31. $\int \frac{xdx}{2x^2+3}$
32. $\int \frac{ax+b}{a^2x^2+b^2}dx$
33. $\int \frac{xdx}{\sqrt{a^4-x^4}}$
34. $\int \frac{x^2dx}{1+x^6}$
35. $\int \frac{x^2dx}{\sqrt{x^6-1}}$
36. $\int \sqrt{\frac{\arcsin x}{1-x^2}}dx$
37. $\int \frac{\arctan \frac{x}{2}}{4+x^2}dx$
38. $\int \frac{x-\sqrt{\arctan 2x}}{1+4x^2}dx$

39. $\int \frac{dx}{\sqrt{(1+x^2)\ln(x+\sqrt{1+x^2})}}$

40. $\int ae^{-mx}dx$

41. $\int 4^{2-3x}dx$

42. $\int (e^t - e^{-t})dt$

43. $\int (e^{\frac{x}{a}} + e^{-\frac{x}{a}})dx$

44. $\int \frac{(a^x - b^x)^2}{a^x b^x}dx$

45. $\int \frac{a^{2x}-1}{\sqrt{a^x}}dx$

46. $\int e^{-(x^2+1)}xdx$

47. $\int x \cdot 7^{x^2}dx$

48. $\int \frac{e^{\frac{1}{x}}}{x^2}dx$

49. $\int 5^{\sqrt{x}}\frac{dx}{\sqrt{x}}$

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

51. $\int e^x\sqrt{a - be^x}dx$

52. $\int \left(e^{\frac{x}{a}} + 1\right)^{\frac{1}{3}} e^{\frac{x}{a}}dx$

53. $\int \frac{dx}{2^x + 3}$

54. $\int \frac{a^x dx}{1 + a^{2x}}$

55. $\int \frac{e^{-bx}}{1 - e^{-2bx}}dx$

56. $\int \frac{e^t}{\sqrt{1 - e^{2t}}}dt$

57. $\int \sin(a + bx)dx$

58. $\int \cos\frac{x}{\sqrt{2}}dx$

59. $\int (\cos ax + \sin ax)^2 dx$

60. $\int \cos\sqrt{x}\frac{dx}{\sqrt{x}}$

61. $\int \sin(\log x)\frac{dx}{x}$

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

63. $\int \cos^2 x dx$

64. $\int \sec^2(ax + b)dx$

65. $\int \cot^2 ax dx$

66. $\int \frac{dx}{\sin\frac{x}{a}}$

67. $\int \frac{dx}{3\cos(5x - \frac{\pi}{4})}$

68. $\int \frac{xdx}{\cos^2 x^2}$

69. $\int x\sin(1 - x^2)dx$

70. $\int \tan x dx$

71. $\int \cot x dx$

72. $\int \cot\frac{x}{a - b}dx$

73. $\int \frac{dx}{\tan \frac{x}{5}}$

74. $\int \tan \sqrt{x} \frac{dx}{\sqrt{x}}$

75. $\int x \cot(x^2+1)dx$

76. $\int \frac{dx}{\sin x \cos x}$

77. $\int \cos \frac{x}{a} \sin \frac{a}{x} dx$

78. $\int \sin^3 6x \cos 6x dx$

79. $\int \frac{\cos ax}{\sin^5 ax} dx$

80. $\int \frac{\sin 3x}{3+\cos 3x} dx$

81. $\int \frac{\sin x \cos x}{\sqrt{\cos^2 x - \sin^2 x}} dx$

82. $\int \sqrt{1+3\cos^2 x} \sin 2x dx$

83. $\int \tan \frac{x}{3} \sec^2 \frac{x}{3} dx$

84. $\int \frac{\sqrt{\tan x}}{\cos^2 x} dx$

85. $\int \frac{\cot^{\frac{2}{3}} x}{\sin^2 x} dx$

86. $\int \frac{(\cos ax + \sin ax)^2}{\sin ax} dx$

87. $\int x \sqrt[5]{5-x^2} dx$

88. $\int \frac{x^3-1}{x^4-4x+1} dx$

89. $\int \frac{x^3}{x^8+5} dx$

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

91. $\int \frac{3-\sqrt{2+3x^2}}{2+3x^2} dx$

92. $\int \frac{x^3-1}{x+1} dx$

93. $\int \frac{dx}{\sqrt{e^x}}$

94. $\int \frac{1-\sin x}{x+\cos x} dx$

95. $\int \frac{\tan 3x - \cot 3x}{\sin 3x} dx$

96. $\int \frac{dx}{x \ln^2 x}$

97. $\int \frac{\sec^2 x}{\sqrt{\tan^2 x - 2}} dx$

98. $\int \left(2 + \frac{x}{2x^2+1}\right) \frac{dx}{2x^2+1}$

99. $\int a^{\sin x} \cos x dx$

100. $\int \frac{x^2}{\sqrt[3]{x^3+1}} dx$

101. $\int \frac{x dx}{\sqrt{1-x^4}}$

102. $\int \frac{(1+x)^2}{x(1+x^2)} dx$

103. $\int \frac{\arcsin x + x}{\sqrt{1-x^2}} dx$

104. $\int \frac{\sec x \tan x}{\sqrt{\sec^2 x + 1}} dx$

105. $\int \sqrt{\frac{\ln\left(x+\sqrt{x^2}+1\right)}{1+x^2}} dx$

Hallar las siguientes integrales, utilizando para ello las sustituciones indicadas

1. $\int \frac{dx}{x\sqrt{x^2-2}}, \quad x=\frac{1}{t}$
2. $\int \frac{dx}{e^x+1}, \quad x=-\ln t$
3. $\int x(5x^2-3)^7 dx, \quad 5x^2-3=t$
4. $\int \frac{xdx}{\sqrt{x+1}}, \quad t=\sqrt{x+1}$
5. $\int \frac{\cos x dx}{\sqrt{1+\sin^2 x}}, \quad t=\sin x$

Hallar las siguientes integrales, empleando para ello las sustituciones más adecuadas

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

Hallar las siguientes integrales, empleando sustituciones trigonométricas

1. $\int \frac{\sqrt{x^2+1}}{x^2}dx$
2. $\int \frac{x^2dx}{\sqrt{1-x^2}}$
3. $\int \frac{x^3dx}{\sqrt{2-x^2}}$
4. $\int \frac{\sqrt{x^2-a^2}}{x}dx$
5. $\int \frac{dx}{x\sqrt{x^2-1}}$
6. $\int \frac{\sqrt{x^2+1}}{x}dx$
7. $\int \frac{dx}{x^2\sqrt{4-x^2}}$
8. $\int \sqrt{1-x^2}dx$

Calcular la integral

$$\int \frac{dx}{x(1-x)}, \text{ valiendose de la sustitución } x = \sin^2 t$$

Hallar

$$\int \sqrt{a^2 + x^2}dx \quad \text{empleando la sustitución hiperbólica } x = a\sinh t$$

Integración por partes

1. $\int x \ln x dx$
2. $\int e^x \cos x dx$
3. $\int \ln x dx$
4. $\int \arctan x dx$
5. $\int \arcsin x dx$
6. $\int x \sin x dx$
7. $\int x \cos 3x dx$
8. $\int \frac{x}{e^x} dx$
9. $\int x \cdot 2^{-x} dx$
10. $\int x^2 e^{3x} dx$
11. $\int (x^2 - 2x + 5)e^{-x} dx$
12. $\int x^3 e^{-\frac{x}{3}} dx$
13. $\int x \sin x \cos x dx$
14. $\int (x^2 + 5x + 6)\cos 2x dx$
15. $\int x^2 \ln x dx$
16. $\int \ln^2 x dx$
17. $\int \frac{\ln x}{x^3} dx$
18. $\int \frac{\ln x}{\sqrt{x}} dx$
19. $\int x \arctan x dx$
20. $\int x \arcsin x dx$
21. $\int \ln(x + \sqrt{1 + x^2}) dx$
22. $\int \frac{x}{\sin^2 x} dx$
23. $\int \frac{x \cos x}{\sin^2 x} dx$
24. $\int e^x \sin x dx$
25. $\int 3^x \cos x dx$
26. $\int e^{ax} \sin bx dx$
27. $\int \sin(\ln x) dx$

Hallar las siguientes integrales, empleando diferentes procedimientos

1. $\int x^3 e^{-x^2} dx$
2. $\int e^{\sqrt{x}} dx$
3. $\int (x^2 - 2x + 3) \ln x dx$
4. $\int \frac{\ln^2 x}{x^2} dx$
5. $\int x \ln \frac{1-x}{1+x} dx$
6. $\int \frac{\ln(\ln x)}{x} dx$
7. $\int x^2 \arctan 3x dx$
8. $\int x(\arctan x)^2 dx$
9. $\int \frac{\arcsin \sqrt{x}}{\sqrt{1-x}} dx$
10. $\int \frac{\sin^2 x}{e^x} dx$
11. $\int \cos^2(\ln x) dx$
12. $\int \frac{x^2}{\sqrt{9-x^2}} dx$
13. $\int \frac{dx}{2x^2 - 5x + 7}$
14. $\int \frac{x+3}{\sqrt{x^2+2x+2}} dx$
15. $\int \frac{dx}{(x+1)\sqrt{x^2+1}}$
16. $\int \frac{dx}{x\sqrt{1-x^2}}$

Hallar las integrales (método de fracciones simples)

1. $\int \frac{dx}{(x+a)(x+b)}$
2. $\int \frac{x^2 - 5x + 9}{x^2 - 5x + 6} dx$
3. $\int \frac{dx}{(x-1)(x+2)(x+3)}$
4. $\int \frac{2x^2 + 41x - 91}{(x-1)(x+3)(x-4)} dx$
5. $\int \frac{5x^3 + 2}{x^3 - 5x^2 + 4x} dx$
6. $\int \frac{dx}{x(x+1)^2}$
7. $\int \frac{x^{-}1}{4x^3 - x} dx$
8. $\int \frac{x^4 - 6x^3 + 12x^2 + 6}{x^3 - 6x^2 + 12x - 8} dx$
9. $\int \frac{5x^2 + 6x + 9}{(x-3)^2(x+1)^2} dx$
10. $\int \frac{x^2 - 8x + 7}{(x^2 - 3x - 10)^2} dx$
11. $\int \frac{2x - 3}{(x^2 - 3x + 2)^2} dx$
12. $\int \frac{x^3 + x + 1}{x(x^2+1)} dx$
13. $\int \frac{x^4}{x^4 - 1} dx$
14. $\int \frac{x}{(x-1)(x+1)^2} dx$

15. $\int \frac{x}{x^4 - 4x^2 + 3} dx$

16. $\int \frac{dx}{(x^2 - 4x + 3)(x_4^2 x + 5)}$

17. $\int \frac{dx}{x^3 + 1}$

18. $\int \frac{dx}{x^4 + 1}$

19. $\int \frac{dx}{x^4 + x^2 + 1}$