Tabla de Integrales

Formas básicas

1. $\int u\,dv = uv - \int v\,du$
2. $\int u^n\,du = \frac{u^{n+1}}{n+1} + C$
3. $\int \frac{du}{u} = \ln u + C$
4. $\int e^u\,du = e^u + C$
5. $\int a^u\,du = \frac{a^u}{\ln a} + C$
6. $\int \sin u\,du = -\cos u + C$
7. $\int \cos u\,du = \sin u + C$
8. $\int \sec^2 u\,du = \tan u + C$
9. $\int \csc^2 u\,du = -\cot u + C$
10. $\int \sec u \tan u\,du = \sec u + C$
11. $\int \csc u \cot u\,du = -\csc u + C$
12. $\int \tan u\,du = \ln|\sec u| + C$
13. $\int \cot u\,du = \ln|\sin u| + C$
14. $\int \sec u\,du = \ln|\sec u + \tan u| + C$
15. $\int \csc u\,du = \ln|\csc u - \cot u| + C$
16. $\int \frac{du}{\sqrt{a^2-u^2}} = \sin^{-1}\left(\frac{u}{a}\right) + C$
17. $\int \frac{du}{a^2+u^2} = \frac{1}{a}\tan^{-1}\left(\frac{u}{a}\right) + C$
18. $\int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a}\sec^{-1}\left(\frac{u}{a}\right) + C$
19. $\int \frac{du}{a^2-u^2} = \frac{1}{2a}\ln\left|\frac{u+a}{u-a}\right| + C$
20. $\int \frac{du}{u^2-a^2} = \frac{1}{2a}\ln\left|\frac{u-a}{u+a}\right| + C$

Formas que contienen $\sqrt{a^2+u^2}$

21. $\int \sqrt{a^2+u^2}\,du = \frac{u\sqrt{a^2+u^2}}{2} + \frac{a^2}{2}\ln\left|u+\sqrt{a^2+u^2}\right| + C$
22. $\int u^2\sqrt{a^2+u^2}\,du = \frac{u}{8}\left(a^2+2u^2\right)\sqrt{a^2+u^2} - \frac{a^4}{8}\ln\left|u+\sqrt{a^2+u^2}\right| + C$
23. $\int \frac{\sqrt{a^2+u^2}}{u}\,du = \sqrt{a^2+u^2} - a\ln\left|\frac{a+\sqrt{a^2+u^2}}{u}\right| + C$
24. $\int \frac{\sqrt{a^2+u^2}}{u^2}\,du = -\frac{\sqrt{a^2+u^2}}{u} + \ln\left|u+\sqrt{a^2+u^2}\right| + C$
25. $\int \frac{du}{\sqrt{a^2+u^2}} = \ln\left|u+\sqrt{a^2+u^2}\right| + C$
26. $\int \frac{u^2\,du}{\sqrt{a^2+u^2}} = \frac{u}{2}\sqrt{a^2+u^2} - \frac{a^2}{2}\ln\left|u+\sqrt{a^2+u^2}\right| + C$
27. $\int \frac{du}{u\sqrt{a^2+u^2}} = -\frac{1}{a}\ln\left|\frac{\sqrt{a^2+u^2}+a}{u}\right| + C$
28. $\int \frac{du}{u^2\sqrt{a^2+u^2}} = -\frac{\sqrt{a^2+u^2}}{a^2u} + C$
29. $\int \frac{du}{(a^2+u^2)^{3/2}} = \frac{u}{a^2\sqrt{a^2+u^2}} + C$

Formas que contienen $\sqrt{a^2-u^2}$

30. $\int \sqrt{a^2-u^2}\,du = \frac{u}{2}\sqrt{a^2-u^2} + \frac{a^2}{2}\sin^{-1}\left(\frac{u}{a}\right) + C$
31. $\int u^2\sqrt{a^2-u^2}\,du = \frac{u}{8}\left(2u^2-a^2\right)\sqrt{a^2-u^2} + \frac{a^4}{8}\sin^{-1}\left(\frac{u}{a}\right) + C$
32. $\int \frac{\sqrt{a^2-u^2}}{u}\,du = \sqrt{a^2-u^2} - a\ln\left|\frac{a+\sqrt{a^2-u^2}}{u}\right| + C$
33. $\int \frac{\sqrt{a^2-u^2}}{u^2}\,du = -\frac{1}{u}\sqrt{a^2-u^2} - \sin^{-1}\left(\frac{u}{a}\right) + C$
34. $\int \frac{u^2\,du}{\sqrt{a^2-u^2}} = -\frac{u}{2}\sqrt{a^2-u^2} + \frac{a^2}{2}\sin^{-1}\left(\frac{u}{a}\right) + C$
35. $\int \frac{du}{u\sqrt{a^2-u^2}}\,du = -\frac{1}{a}\ln\left|\frac{a+\sqrt{a^2-u^2}}{u}\right| + C$
36. $\int \frac{du}{u^2\sqrt{a^2-u^2}} = -\frac{1}{a^2u}\sqrt{a^2-u^2} + C$
37. $\int \frac{du}{(a^2-u^2)^{3/2}} = \frac{u}{a^2\sqrt{a^2-u^2}} + C$
38. $\int \left(a^2-u^2\right)^{3/2} = -\frac{u}{8}\left(2u^2-5a^2\right)\sqrt{a^2-u^2} + \frac{3a^4}{8}\sin^{-1}\left(\frac{u}{a}\right) + C$

Formas que contienen $\sqrt{u^2-a^2}$

39. $\displaystyle\int u^2\sqrt{u^2-a^2}\,du=\frac{u}{8}\left(2a^2-a^2\right)\sqrt{u^2-a^2}-\frac{a^4}{8}\ln\left|u+\sqrt{u^2-a^2}\right|+C$

40. $\displaystyle\int \sqrt{u^2-a^2}\,du=\frac{u}{2}-\frac{a^2}{2}\ln\left|u+\sqrt{u^2-a^2}\right|+C$

41. $\displaystyle\int \frac{\sqrt{u^2-a^2}}{u}\,du=\sqrt{u^2-a^2}-a\cos^{-1}\left(\frac{a}{u}\right)+C$

42. $\displaystyle\int \frac{\sqrt{u^2-a^2}}{u^2}\,du=-\frac{\sqrt{u^2-a^2}}{u}+\ln\left|u+\sqrt{u^2-a^2}\right|+C$

43. $\displaystyle\int \frac{du}{\sqrt{u^2-a^2}}=\ln\left|u+\sqrt{u^2-a^2}\right|+C$

44. $\displaystyle\int \frac{u^2\,du}{\sqrt{u^2-a^2}}=\frac{u}{2}\sqrt{u^2-a^2}+\frac{a^2}{2}\ln\left|u+\sqrt{u^2-a^2}\right|+C$

45. $\displaystyle\int \frac{du}{u^2\sqrt{u^2-a^2}}=\frac{\sqrt{u^2-a^2}}{a^2u}+C$

46. $\displaystyle\int \frac{du}{(u^2-a^2)^{3/2}}=-\frac{u}{a^2\sqrt{u^2-a^2}}+C$

Formas que contienen $a+bu$

47. $\displaystyle\int \frac{u\,du}{a+bu}=\frac{1}{b^2}(a+bu-a\ln|a+bu|)+C$

48. $\displaystyle\int \frac{u^2\,du}{a+bu}=\frac{1}{2b^2}+\left[(a+bu)^2-4a(a+bu)+2a^2\ln|a+bu|\right]+C$

49. $\displaystyle\int \frac{du}{u(a+bu)}=\frac{1}{a}\ln\left|\frac{u}{a+bu}\right|+C$

50. $\displaystyle\int \frac{du}{u^2(a+bu)}=-\frac{1}{au}+\frac{b}{a^2}\ln\left|\frac{a+bu}{u}\right|+C$

51. $\displaystyle\int \frac{u\,du}{(a+bu)^2}=\frac{a}{b^2}\ln|a+bu|+C$

52. $\displaystyle\int \frac{du}{u(a+bu)^2}=\frac{a}{a(a+bu)}-\frac{1}{a^2}\ln\left|\frac{a+bu}{u}\right|+C$

53. $\displaystyle\int \frac{u^2\,du}{(a+bu)^2}=\frac{1}{b^3}\left(a+bu-\frac{a^2}{a+bu}-2a\ln|a+bu|\right)+C$

54. $\displaystyle\int u\sqrt{a+bu}\,du=\frac{2}{15b^2}(3bu-2a)(a+bu)^{3/2}+C$

55. $\displaystyle\int \frac{u\,du}{\sqrt{a+bu}}=\frac{2}{3b^2}(bu-2a)\sqrt{a+bu}+C$

56. $\displaystyle\int \frac{u^2\,du}{\sqrt{a+bu}}=\frac{2}{15b^3}\left(8a^2+3b^2u^2-4abu\right)\sqrt{a+bu}+C$

57. $\displaystyle\int \frac{du}{u\sqrt{a+bu}}=\begin{cases}\dfrac{1}{\sqrt{a}}\ln\left|\dfrac{\sqrt{a+bu}-\sqrt{a}}{\sqrt{a+bu}+\sqrt{a}}\right|+C & (a>0)\\[2ex] \dfrac{2}{\sqrt{-a}}\tan^{-1}\sqrt{\dfrac{a+bu}{-a}}+C & (a<0)\end{cases}$

58. $\displaystyle\int \frac{\sqrt{a+bu}}{u}\,du=2\sqrt{a+bu}+a\int\frac{du}{u\sqrt{a+bu}}+C$

59. $\displaystyle\int \frac{\sqrt{a+bu}}{u^2}\,du=-\frac{\sqrt{a+bu}}{u}+\frac{b}{2}\int\frac{du}{u\sqrt{a+bu}}+C$

60. $\displaystyle\int u^n\sqrt{a+bu}\,du=\frac{2u^n(a+bu)^{3/2}}{b(2n+3)}-\frac{2na}{b(2n+3)}\int\frac{u^n\,du}{\sqrt{a+bu}}\,du+C$

61. $\displaystyle\int \frac{u^n\,du}{\sqrt{a+bu}}=\frac{2u^n\sqrt{a+bu}}{b(2n+1)}-\frac{2na}{b(2n+1)}\int\frac{u^{n-1}\,du}{\sqrt{a+bu}}+C$

62. $\displaystyle\int \frac{du}{u^n\sqrt{a+bu}}=-\frac{\sqrt{a+bu}}{a(n-1)u^{n-1}}-\frac{b(2n-3)}{2a(n-1)}\int\frac{du}{u^{n-1}\sqrt{a+bu}}+C$

Formas trigonométricas

63. $\displaystyle\int \sin^2 u\,du=\frac{1}{2}u-\frac{1}{4}\sin(2u)+C$

64. $\displaystyle\int \cos^2 u\,du=\frac{1}{2}u+\frac{1}{4}\sin(2u)+C$

65. $\displaystyle\int \tan^2 u\,du=\tan u-u+C$

66. $\displaystyle\int \cot^2 u\,du=\cot u-u+C$

67. $\displaystyle\int \sin^3 u\,du=-\frac{1}{3}\left(2+\sin^2 u\right)\cos u+C$

68. $\displaystyle\int \cos^2 u\,du=\frac{1}{3}\left(2+\cos^2 u\right)\sin u+C$

69. $\displaystyle\int \tan^3 u\,du=\frac{1}{2}\tan^2 u+\ln|\cos u|+C$

70. $\displaystyle\int \cot^3 u\,du=-\frac{1}{2}\cot^2 u-\ln|\sin u|+C$

71. $\displaystyle\int \sec^3 u\,du=\frac{1}{2}\sec u\tan u+\frac{1}{2}\ln|\sec u+\tan u|+C$

72. $\displaystyle\int \csc^3 u\,du=-\frac{1}{2}\csc u\cot u+\frac{1}{2}\ln|\csc u-\cot u|+C$

73. $\int \sin^n u\,du = -\frac{1}{n}\sin^{n-1} u\cos u + \frac{n-1}{n}\int \sin^{n-2} u\,du$

74. $\int \cos^n u\,du = \frac{1}{n}\cos^{n-1} u\sin u + \frac{n-1}{n}\int \cos^{n-2} u\,du + C$

75. $\int \tan^n u\,du = \frac{1}{n-1}\tan^{n-1} u - \int \tan^{n-2} u\,du$

76. $\int \cot^n u\,du = -\frac{1}{n-1}\cot^{n-1} u + \int \cot^{n-2} u\,du + C$

77. $\int \sec^n u\,du = \frac{1}{n-1}\tan u\sec^{n-2} u + \frac{n-2}{n-1}\int \sec^{n-2} u\,du$

78. $\int \csc^n u\,du = -\frac{1}{n-1}\cot u\csc^{n-2} u + \frac{n-2}{n-1}\int \csc^{n-2} u\,du$

79. $\int \sin(au)\sin(bu)\,du = \frac{\sin[(a-b)u]}{2(a-b)} - \frac{\sin[(a+b)u]}{2(a+b)} + C$

80. $\int \cos(au)\cos(bu)\,du = \frac{\sin[(a-b)u]}{2(a-b)} + \frac{\sin[(a+b)u]}{2(a+b)} + C$

81. $\int \sin(au)\cos(bu)\,du = -\frac{\cos[(a-b)u]}{2(a-b)} - \frac{\cos[(a+b)u]}{2(a+b)} + C$

82. $\int u\sin u\,du = \sin u - u\cos u + C$

83. $\int u\cos u\,du = \cos u + u\sin u + C$

84. $\int u^n \sin u\,du = -u^n\cos u + n\int u^{n-1}\cos u\,du$

85. $\int u^n \cos u\,du = u^n\sin u - n\int u^{n-1}\sin u\,du$

86. $\int \sin^n u\cos^m u\,du = \begin{cases} -\frac{\sin^{n-1} u\cos^{m+1} u}{n+m} + \frac{n-1}{n+m}\int \sin^{n-2} u\cos^m u\,du \\ \frac{\sin^{n+1} u\cos^{m-1} u}{n+m} + \frac{m-1}{n+m}\int \sin^n u\cos^{m-2} u\,du \end{cases}$

Formas trigonométricas inversas

87. $\int \sin^{-1} u\,du = u\sin^{-1} u + \sqrt{1-u^2} + C$

88. $\int \cos^{-1} u\,du = u\cos^{-1} u - \sqrt{1-u^2} + C$

89. $\int \tan^{-1} u\,du = u\tan^{-1} u - \frac{1}{2}\ln\left(1+u^2\right) + C$

90. $\int u\sin^{-1} u\,du = \frac{2u^2-1}{4}\sin^{-1} u + \frac{u\sqrt{1-u^2}}{4} + C$

91. $\int u\cos^{-1} u\,du = \frac{2u^2-1}{4}\cos^{-1} u - \frac{u\sqrt{1-u^2}}{4} + C$

92. $\int u\tan^{-1} u\,du = \frac{u^2+1}{2}\tan^{-1} u - \frac{u}{2} + C$

93. $\int u^n \sin^{-1} u\,du = \frac{1}{n+1}\left[u^{n+1}\sin^{-1} u - \int \frac{u^{n+1}\,du}{\sqrt{1-u^2}}\right], \qquad n \neq 1$

94. $\int u^n \cos^{-1} u\,du = \frac{1}{n+1}\left[u^{n+1}\cos^{-1} u + \int \frac{u^{n+1}\,du}{\sqrt{1-u^2}}\right], \qquad n \neq 1$

95. $\int u^n \tan^{-1} u\,du = \frac{1}{n+1}\left[u^{n+1}\tan^{-1} u - \int \frac{u^{n+1}\,du}{1+u^2}\right], \qquad n \neq 1$

Formas exponenciales y logarítmicas

96. $\int ue^{au}\,du = \frac{1}{a^2}(au-1)e^{au} + C$

97. $\int u^n e^{au}\,du = \frac{1}{a}u^n e^{au} - \frac{n}{a}\int u^{n-1}e^{au}\,du$

98. $\int e^{au}\sin(bu)\,du = \frac{e^{au}}{a^b+b^2}(a\sin(bu) - b\cos(bu)) + C$

99. $\int e^{au}\cos(bu)\,du = \frac{e^{au}}{a^2+b^2}(a\cos(bu) + b\sin(bu)) + C$

100. $\int \ln u\,du = u\ln u - u + C$

101. $\int u^n \ln u\,du = \frac{u^{n+1}}{(n+1)^2}[(n+1)\ln u - 1] + C$

102. $\int \frac{du}{u\ln u} = \ln|\ln u| + C$

Formas hiperbólicas

103. $\int \sinh u\,du = \cosh u + C$

104. $\int \cosh u\,du = \sinh u + C$

105. $\int \tanh u\,du = \ln(\cosh u) + C$

106. $\int \coth u\,du = \ln|\sinh u| + C$

107. $\int \operatorname{sech} u \, du = \tan^{-1}|\sinh u| + C$

108. $\int \operatorname{csch} u \, du = \ln\left|\tanh \frac{u}{2}\right| + C$

109. $\int \operatorname{sech}^2 u \, du = \tanh u + C$

110. $\int \operatorname{csch}^2 u \, du = -\coth u + C$

111. $\int \operatorname{sech} u \tanh u \, du = -\operatorname{sech} u + C$

112. $\int \operatorname{csch} u \coth u \, du = -csch u + C$

Formas que contienen $\sqrt{2au - u^2}$

113. $\int \sqrt{2au - u^2}\, du = \frac{u-a}{2}\sqrt{2au-u^2} + \frac{a^2}{2}\cos^{-1}\left(\frac{a-u}{a}\right) + C$

114. $\int u\sqrt{2au - u^2}\, du = \frac{2u^2 - au - 3a^2}{6}\sqrt{2au-u^2} + \frac{a^3}{2}\cos^{-1}\left(\frac{a-u}{a}\right) + C$

115. $\int \frac{\sqrt{2au-u^2}}{u}\, du = \sqrt{2au-u^2} + a\cos^{-1}\left(\frac{a-u}{1}\right) + C$

116. $\int \frac{\sqrt{2au-u^2}}{u^2}\, du = -\frac{2\sqrt{2au-u^2}}{u} - \cos^{-1}\left(\frac{a-u}{a}\right) + C$

117. $\int \frac{du}{\sqrt{2au-u^2}} = \cos^{-1}\left(\frac{a-u}{a}\right) + C$

118. $\int \frac{u\, du}{\sqrt{2au-u^2}} = -\sqrt{2au-u^2} + a\cos^{-1}\left(\frac{a-u}{a}\right) + C$

119. $\int \frac{u^2\, du}{\sqrt{2au-u^2}} = -\frac{(u+3a)}{2}\sqrt{2au-u^2} + \frac{3a^2}{2}\cos^{-1}\left(\frac{a-u}{a}\right) + C$

120. $\int \frac{du}{u\sqrt{2au-u^2}} = -\frac{\sqrt{2au-u^2}}{au} + C$

Fuente: *Earl W. Swokowski. Calculus with Analytic Geometry.* Segunda edición. Ed. Prindle, Weber & Schmidt. EE.UU. 1979.