

Tabla de Integrales

FORMAS BÁSICAS

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

FORMAS QUE CONTIENEN $\sqrt{a^2 + u^2}$

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

FORMAS QUE CONTIENEN $\sqrt{a^2 - u^2}$

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

FORMAS QUE CONTIENEN $\sqrt{u^2 - a^2}$

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| 39. $\int u^2 \sqrt{u^2 - a^2} \, du = \frac{u}{8} (2u^2 - a^2) \sqrt{u^2 - a^2} - \frac{a^4}{8} \ln \left u + \sqrt{u^2 - a^2} \right + C$ |
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$$40. \int \sqrt{u^2 - a^2} \, du = \frac{u}{2} \sqrt{u^2 - a^2} - \frac{a^2}{2} \ln |u + \sqrt{u^2 - a^2}| + C$$

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

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

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

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

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

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

FORMAS QUE CONTIENEN $a + bu$

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

$$48. \int \frac{u^2 \, du}{a + bu} = \frac{1}{2b^3} + [(a + bu)^2 - 4a(a + bu) + 2a^2 \ln |a + bu|] + C$$

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

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

$$51. \int \frac{u \, du}{(a + bu)^2} = \frac{a}{b^2(a + bu)} + \frac{1}{b^2} \ln |a + bu| + C$$

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

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

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

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

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

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

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

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

$$60. \int u^n \sqrt{a + bu} \, du = \frac{2u^n(a + bu)^{3/2}}{b(2n + 3)} - \frac{2na}{b(2n + 3)} \int \frac{u^{n-1}}{\sqrt{a + bu}} \, du$$

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

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

FORMAS TRIGONOMÉTRICAS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FORMAS TRIGONOMÉTRICAS INVERSAS

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

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

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

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

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

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

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

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

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

FORMAS EXPONENCIALES Y LOGARÍTMICAS

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

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

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

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

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

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

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

FORMAS HIPERBÓLICAS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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