

Table of Integrals

Appendix

NOTE. In every integral the constant of integration is omitted and should be supplied by the reader himself.

SOME FUNDAMENTAL FORMULAS

1. $\int [f(x) \pm g(x)] dx = \int f(x) dx \pm \int g(x) dx.$
2. $\int cf(x) dx = c \int f(x) dx.$
3. $\int f[g(x)]g'(x) dx = \int f(u) du$ where $u = g(x).$
4. $\int f(x)g(x) dx = f(x) \int g(x) dx - \int f'(x) \left\{ \int g(x) dx \right\} dx.$

RATIONAL INTEGRANDS INVOLVING $(ax + b)$

5. $\int (ax + b)^n dx = \frac{(ax + b)^{n+1}}{a(n+1)} \quad (n \neq -1).$
6. $\int (ax + b)^{-1} dx = \frac{1}{a} \ln |ax + b|.$
7. $\int x(ax + b)^n dx = \frac{1}{a^2}(ax + b)^{n+1} \left[\frac{ax + b}{n+2} - \frac{b}{n+1} \right] \quad (n \neq -1, -2).$
8. $\int x(ax + b)^{-1} dx = \frac{x}{a} - \frac{b}{a^2} \ln |ax + b|.$
9. $\int x(ax + b)^{-2} dx = \frac{1}{a^2} \left[\ln |ax + b| + \frac{b}{ax + b} \right].$
10. $\int \frac{x^2}{ax + b} dx = \frac{1}{a^3} \left[\frac{1}{2}(ax + b)^2 - 2b(ax + b) + b^2 \ln |ax + b| \right].$
11. $\int \frac{x^2}{(ax + b)^2} dx = \frac{1}{a^3} \left[ax + b - \frac{b^2}{ax + b} - 2b \ln |ax + b| \right].$
12. $\int \frac{1}{x(ax + b)} dx = \frac{1}{b} \ln \left| \frac{x}{ax + b} \right| \quad (b \neq 0).$
13. $\int \frac{1}{x^2(ax + b)} dx = -\frac{1}{bx} + \frac{a}{b^2} \ln \left| \frac{ax + b}{x} \right| \quad (b \neq 0).$
14. $\int \frac{1}{x(ax + b)^2} dx = \frac{1}{b(ax + b)} - \frac{1}{b^2} \ln \left| \frac{ax + b}{x} \right| \quad (b \neq 0).$
15. $\int \frac{1}{(ax + b)(cx + d)} dx = \frac{1}{bc - ad} \ln \left| \frac{cx + d}{ax + b} \right| \quad (bc - ad \neq 0).$

$$16. \int \frac{x}{(ax+b)(cx+d)} dx = \frac{1}{bc-ad} \left\{ \frac{b}{a} \ln|ax+b| - \frac{d}{c} \ln|cx+d| \right\} \quad (bc-ad \neq 0).$$

$$17. \int \frac{1}{(ax+b)^2(cx+d)} dx = \frac{1}{bc-ad} \left\{ \frac{1}{ax+b} + \frac{c}{bc-ad} \ln \left| \frac{cx+d}{ax+b} \right| \right\} \quad (bc-ad \neq 0).$$

$$18. \int \frac{x}{(ax+b)^2(cx+d)} dx = -\frac{1}{bc-ad} \left\{ \frac{b}{a(ax+b)} + \frac{d}{bc-ad} \ln \left| \frac{cx+d}{ax+b} \right| \right\} \quad (bc-ad \neq 0).$$

INTEGRALS CONTAINING $\sqrt{ax+b}$

$$19. \int x\sqrt{ax+b} dx = \frac{2}{a^2} \left[\frac{(ax+b)^{5/2}}{5} - \frac{b(ax+b)^{3/2}}{3} \right].$$

$$20. \int x^2\sqrt{ax+b} dx = \frac{2}{a^3} \left[\frac{(ax+b)^{7/2}}{7} - \frac{2b(ax+b)^{5/2}}{5} + \frac{b^2(ax+b)^{3/2}}{3} \right].$$

$$21. \int \frac{x}{\sqrt{ax+b}} dx = \frac{2ax-4b}{3a^2} \sqrt{ax+b}.$$

$$22. \int \frac{1}{x\sqrt{ax+b}} dx = \frac{1}{\sqrt{b}} \ln \left| \frac{\sqrt{ax+b} - \sqrt{b}}{\sqrt{ax+b} + \sqrt{b}} \right| \quad (b > 0). \\ = \frac{2}{\sqrt{-b}} \operatorname{Tan}^{-1} \sqrt{\frac{ax+b}{-b}} \quad (b < 0).$$

$$23. \int \frac{1}{x^n\sqrt{ax+b}} dx = -\frac{1}{b(n-1)} \frac{\sqrt{ax+b}}{x^{n-1}} - \frac{(2n-3)a}{(2n-2)b} \int \frac{1}{x^{n-1}\sqrt{ax+b}} dx \quad (n \neq 1).$$

$$24. \int \frac{\sqrt{ax+b}}{x} dx = 2\sqrt{ax+b} + b \int \frac{1}{x\sqrt{ax+b}} dx \quad (\text{see 22}).$$

$$25. \int \frac{\sqrt{ax+b}}{x^2} dx = -\frac{\sqrt{ax+b}}{x} + \frac{a}{2} \int \frac{1}{x\sqrt{ax+b}} dx \quad (\text{see 22}).$$

INTEGRALS CONTAINING $a^2 \pm x^2$

$$26. \int \frac{1}{a^2+x^2} dx = \frac{1}{a} \operatorname{Tan}^{-1} \frac{x}{a}.$$

$$27. \int \frac{1}{(a^2+x^2)^2} dx = \frac{x}{2a^2(a^2+x^2)} + \frac{1}{2a^3} \operatorname{Tan}^{-1} \frac{x}{a}.$$

$$28. \int \frac{1}{a^2-x^2} dx = \frac{1}{2a} \ln \left| \frac{x+a}{x-a} \right|.$$

$$29. \int \frac{1}{(a^2-x^2)^2} dx = \frac{x}{2a^2(a^2-x^2)} + \frac{1}{4a^3} \ln \left| \frac{x+a}{x-a} \right|.$$

$$30. \int \frac{x}{(a^2 \pm x^2)} dx = \pm \frac{1}{2} \ln |a^2 \pm x^2|.$$

$$31. \int \frac{1}{x(a^2 \pm x^2)} dx = \frac{1}{2a^2} \ln \left| \frac{x^2}{a^2 \pm x^2} \right|.$$

INTEGRALS CONTAINING $\sqrt{a^2 - x^2}$

$$32. \int \frac{1}{\sqrt{a^2 - x^2}} dx = \sin^{-1} \frac{x}{a} \quad (a > 0).$$

$$33. \int \frac{x}{\sqrt{a^2 - x^2}} dx = -\sqrt{a^2 - x^2}.$$

$$34. \int \frac{x^2}{\sqrt{a^2 - x^2}} dx = -\frac{x\sqrt{a^2 - x^2}}{2} + \frac{a^2}{2} \sin^{-1} \frac{x}{a} \quad (a > 0).$$

$$35. \int \frac{1}{x\sqrt{a^2 - x^2}} dx = -\frac{1}{a} \ln \left| \frac{a + \sqrt{a^2 - x^2}}{x} \right|.$$

$$36. \int \frac{1}{x^2\sqrt{a^2 - x^2}} dx = -\frac{\sqrt{a^2 - x^2}}{a^2 x}.$$

$$37. \int \frac{1}{(a^2 - x^2)^{3/2}} dx = \frac{1}{a^2} \frac{x}{\sqrt{a^2 - x^2}}.$$

$$38. \int \frac{x}{(a^2 - x^2)^{3/2}} dx = \frac{1}{\sqrt{a^2 - x^2}}.$$

$$39. \int \frac{x^2}{(a^2 - x^2)^{3/2}} dx = \frac{x}{\sqrt{a^2 - x^2}} - \sin^{-1} \frac{x}{a} \quad (a > 0).$$

$$40. \int \frac{1}{x(a^2 - x^2)^{3/2}} dx = \frac{1}{a^2\sqrt{a^2 - x^2}} - \frac{1}{a^3} \ln \left| \frac{a + \sqrt{a^2 - x^2}}{x} \right|.$$

$$41. \int \frac{1}{x^2(a^2 - x^2)^{3/2}} dx = \frac{1}{a^4} \left[-\frac{\sqrt{a^2 - x^2}}{x} + \frac{x}{\sqrt{a^2 - x^2}} \right].$$

$$42. \int \sqrt{a^2 - x^2} dx = \frac{1}{2} a^2 \sin^{-1} \frac{x}{a} + \frac{1}{2} x\sqrt{a^2 - x^2} \quad (a > 0).$$

$$43. \int x\sqrt{a^2 - x^2} dx = -\frac{1}{3}(a^2 - x^2)^{3/2}.$$

$$44. \int x^2\sqrt{a^2 - x^2} dx = -\frac{x(a^2 - x^2)^{3/2}}{4} + \frac{a^2 x\sqrt{a^2 - x^2}}{8} + \frac{a^4}{8} \sin^{-1} \frac{x}{a} \quad (a > 0).$$

$$45. \int \frac{\sqrt{a^2 - x^2}}{x} dx = \sqrt{a^2 - x^2} - a \ln \left| \frac{a + \sqrt{a^2 - x^2}}{x} \right|.$$

$$46. \int \frac{\sqrt{a^2 - x^2}}{x^2} dx = -\frac{\sqrt{a^2 - x^2}}{x} - \sin^{-1} \frac{x}{a} \quad (a > 0).$$

$$47. \int (a^2 - x^2)^{3/2} dx = \frac{x}{4}(a^2 - x^2)^{3/2} + \frac{3}{8} a^2 x\sqrt{a^2 - x^2} + \frac{3}{8} a^4 \sin^{-1} \frac{x}{a} \quad (a > 0).$$

48. $\int x(a^2 - x^2)^{3/2} dx = -\frac{1}{3}(a^2 - x^2)^{3/2}.$
49. $\int \frac{(a^2 - x^2)^{3/2}}{x} dx = \frac{(a^2 - x^2)^{3/2}}{3} + a^2\sqrt{a^2 - x^2} - a^3 \ln \left| \frac{a + \sqrt{a^2 - x^2}}{x} \right|.$
50. $\int x^n(a^2 - x^2)^{3/2} dx = \frac{1}{n+1}x^{n+1}(a^2 - x^2)^{3/2} + \frac{3}{n+1} \int x^{n+2}\sqrt{a^2 - x^2} dx$
($n \neq -1$).
51. $\int x^n\sqrt{a^2 - x^2} dx = -\frac{1}{n+2}x^{n+1}(a^2 - x^2)^{3/2} + \frac{a^2(n-1)}{n+2} \int x^{n-2}\sqrt{a^2 - x^2} dx$
($n \neq -2$).

INTEGRALS CONTAINING $\sqrt{x^2 \pm a^2}$

52. $\int \frac{1}{\sqrt{x^2 \pm a^2}} dx = \ln |x + \sqrt{x^2 \pm a^2}|.$
53. $\int \frac{x}{\sqrt{x^2 \pm a^2}} dx = \sqrt{x^2 \pm a^2}.$
54. $\int \frac{x^2}{\sqrt{x^2 \pm a^2}} dx = \frac{1}{2}x\sqrt{x^2 \pm a^2} \mp \frac{1}{2}a^2 \ln |x + \sqrt{x^2 \pm a^2}|.$
55. $\int \frac{1}{x\sqrt{x^2 + a^2}} dx = -\frac{1}{a} \ln \left| \frac{a + \sqrt{x^2 + a^2}}{x} \right|.$
56. $\int \frac{1}{x\sqrt{x^2 - a^2}} dx = \frac{1}{a} \text{Sec}^{-1} \frac{x}{a} \quad (a > 0).$
57. $\int \frac{1}{x^2\sqrt{x^2 \pm a^2}} dx = \mp \frac{\sqrt{x^2 \pm a^2}}{a^2x}.$
58. $\int \frac{1}{(x^2 \pm a^2)^{3/2}} dx = \pm \frac{1}{a^2} \frac{x}{\sqrt{x^2 \pm a^2}}.$
59. $\int \frac{x}{(x^2 \pm a^2)^{3/2}} dx = -\frac{1}{\sqrt{x^2 \pm a^2}}.$
60. $\int \frac{x^2}{(x^2 \pm a^2)^{3/2}} dx = -\frac{x}{\sqrt{x^2 \pm a^2}} + \ln |x + \sqrt{x^2 \pm a^2}|.$
61. $\int \frac{1}{x(x^2 \pm a^2)^{3/2}} dx = \pm \frac{1}{a^2} \left\{ \frac{1}{\sqrt{x^2 \pm a^2}} + \int \frac{1}{x\sqrt{x^2 \pm a^2}} dx \right\}$ (see 55 or 56).
62. $\int \frac{1}{x^2(x^2 \pm a^2)^{3/2}} dx = -\frac{1}{a^4} \left\{ \frac{\sqrt{x^2 \pm a^2}}{x} + \frac{x}{\sqrt{x^2 \pm a^2}} \right\}.$
63. $\int \frac{1}{(x^2 \pm a^2)^{3/2}} dx = \frac{1}{a^4} \left\{ \frac{x}{\sqrt{x^2 \pm a^2}} - \frac{1}{3} \frac{x^3}{(x^2 \pm a^2)^{3/2}} \right\}.$
64. $\int \frac{x}{(x^2 \pm a^2)^{3/2}} dx = -\frac{1}{3} \frac{1}{(x^2 \pm a^2)^{3/2}}.$
65. $\int \frac{x^2}{(x^2 \pm a^2)^{3/2}} dx = \pm \frac{1}{3a^2} \frac{x^3}{(x^2 \pm a^2)^{3/2}}.$

66. $\int \sqrt{x^2 \pm a^2} dx = \pm \frac{1}{2}x\sqrt{x^2 \pm a^2} \pm \frac{1}{2}a^2 \ln|x + \sqrt{x^2 \pm a^2}|.$
67. $\int x\sqrt{x^2 \pm a^2} dx = \frac{1}{3}(x^2 \pm a^2)^{3/2}.$
68. $\int x^2\sqrt{x^2 \pm a^2} dx = \frac{x}{4}(x^2 \pm a^2)^{3/2} \mp \frac{1}{8}a^2x\sqrt{x^2 \pm a^2} - \frac{1}{8}a^4 \ln|x + \sqrt{x^2 \pm a^2}|.$
69. $\int \frac{\sqrt{x^2 + a^2}}{x} dx = \sqrt{x^2 + a^2} - a \ln \left| \frac{a + \sqrt{x^2 + a^2}}{x} \right|.$
70. $\int \frac{\sqrt{x^2 - a^2}}{x} dx = \sqrt{x^2 - a^2} - a \operatorname{Sec}^{-1} \frac{x}{a} \quad (a > 0).$
71. $\int \frac{\sqrt{x^2 \pm a^2}}{x^2} dx = -\frac{\sqrt{x^2 \pm a^2}}{x} + \ln|x + \sqrt{x^2 \pm a^2}|.$
72. $\int (x^2 \pm a^2)^{3/2} dx = \frac{x}{4}(x^2 \pm a^2)^{3/2} \pm \frac{3}{8}a^2x\sqrt{x^2 \pm a^2} + \frac{3}{8}a^4 \ln|x + \sqrt{x^2 \pm a^2}|.$
73. $\int x(x^2 \pm a^2)^{3/2} dx = \frac{1}{5}(x^2 \pm a^2)^{5/2}.$
74. $\int \frac{(x^2 \pm a^2)^{3/2}}{x} dx = \frac{1}{3}(x^2 \pm a^2)^{3/2} \pm a^2 \int \frac{\sqrt{x^2 \pm a^2}}{x} dx \quad (\text{see 69 or 70}).$
75. $\int x^n(x^2 \pm a^2)^{3/2} dx = \frac{1}{n+1}x^{n+1}(x^2 \pm a^2)^{3/2} - \frac{3}{n+1} \int x^{n+2}\sqrt{x^2 \pm a^2} dx$
($n \neq -1$).
76. $\int x^n\sqrt{x^2 \pm a^2} dx = \frac{1}{n+2}x^{n+1}(x^2 \pm a^2)^{3/2} \mp \frac{a^2(n-1)}{n+2} \int x^{n-2}\sqrt{x^2 \pm a^2} dx$
($n \neq -2$).

INTEGRALS CONTAINING $ax^2 + bx + c$

77. $\int \frac{1}{ax^2 + bx + c} dx = \frac{2}{\sqrt{4ac - b^2}} \operatorname{Tan}^{-1} \frac{2ax + b}{\sqrt{4ac - b^2}} \quad (b^2 - 4ac < 0)$
 $= \frac{1}{\sqrt{b^2 - 4ac}} \ln \left| \frac{2ax + b - \sqrt{b^2 - 4ac}}{2ax + b + \sqrt{b^2 - 4ac}} \right| \quad (b^2 - 4ac > 0).$
78. $\int \frac{1}{(ax^2 + bx + c)^2} dx = \frac{2ax + b}{(4ac - b^2)(ax^2 + bx + c)} + \frac{2a}{4ac - b^2} \int \frac{1}{ax^2 + bx + c} dx$
(see 77).

TRIGONOMETRIC INTEGRALS

- 79. $\int \sin x dx = -\cos x.$
- 80. $\int \cos x dx = \sin x.$

81. $\int \sec^2 x \, dx = \tan x.$
82. $\int \operatorname{cosec}^2 x \, dx = -\cot x.$
83. $\int \sec x \tan x \, dx = \sec x.$
84. $\int \operatorname{cosec} x \cot x \, dx = -\operatorname{cosec} x.$
85. $\int \sin^2 x \, dx = -\frac{1}{2} \sin x \cos x + \frac{x}{2}.$
86. $\int \cos^2 x \, dx = \frac{1}{2} \sin x \cos x + \frac{x}{2}.$
87. $\int \sin^n x \, dx = -\frac{1}{n} \sin^{n-1} x \cos x + \frac{n-1}{n} \int \sin^{n-2} x \, dx \quad (n \geq 2).$
88. $\int \cos^n x \, dx = \frac{1}{n} \cos^{n-1} x \sin x + \frac{n-1}{n} \int \cos^{n-2} x \, dx \quad (n \geq 2).$
89. $\int \sin x \cos x \, dx = \frac{1}{2} \sin^2 x \text{ or } -\frac{1}{2} \cos^2 x.$
90. $\int \sin^2 x \cos^2 x \, dx = -\frac{1}{4} \sin x \cos^3 x + \frac{1}{8} \sin x \cos x + \frac{x}{8}.$
- 91. $\int \sin^m x \cos^n x \, dx = \frac{1}{m+n} \left\{ -\sin^{m-1} x \cos^{n+1} x + (m-1) \int \sin^{m-2} x \cos^n x \, dx \right\}$
 $= \frac{1}{m+n} \left\{ \sin^{m+1} x \cos^{n-1} x + (n-1) \int \sin^m x \cos^{n-2} x \, dx \right\}.$
92. $\int x \sin x \, dx = \sin x - x \cos x.$
93. $\int x \cos x \, dx = \cos x + x \sin x.$
94. $\int x^n \sin x \, dx = -x^n \cos x + nx^{n-1} \sin x - n(n-1) \int x^{n-2} \sin x \, dx.$
95. $\int x^n \cos x \, dx = x^n \sin x + nx^{n-1} \cos x - n(n-1) \int x^{n-2} \cos x \, dx.$
96. $\int x \sin^2 x \, dx = \frac{x^2}{4} - \frac{x \sin 2x}{4} - \frac{\cos 2x}{8}.$
97. $\int x^2 \sin^2 x \, dx = \frac{x^3}{6} - \left(\frac{x^2}{4} - \frac{1}{8} \right) \sin 2x - \frac{x \cos 2x}{4}.$
98. $\int x \cos^2 x \, dx = \frac{x^2}{4} + \frac{x \sin 2x}{4} + \frac{\cos 2x}{8}.$
99. $\int x^2 \cos^2 x \, dx = \frac{x^3}{6} + \left(\frac{x^2}{4} - \frac{1}{8} \right) \sin 2x + \frac{x \cos 2x}{4}.$

- 100. $\int \tan x \, dx = -\ln |\cos x|.$
- 101. $\int \tan^2 x \, dx = \tan x - x.$
- 102. $\int \tan^n x \, dx = \frac{1}{n-1} \tan^{n-1} x - \int \tan^{n-2} x \, dx \quad (n \geq 2).$
- 103. $\int \cot x \, dx = \ln |\sin x|.$
- 104. $\int \cot^2 x \, dx = -\cot x - x.$
- 105. $\int \cot^n x \, dx = -\frac{1}{n-1} \cot^{n-1} x - \int \cot^{n-2} x \, dx \quad (n \geq 2).$
- 106. $\int \sec x \, dx = \ln |\sec x + \tan x|.$
- 107. $\int \sec^n x \, dx = \frac{1}{n-1} \left\{ \sec^{n-2} x \tan x + (n-2) \int \sec^{n-2} x \, dx \right\} \quad (n \geq 2).$
- 108. $\int \operatorname{cosec} x \, dx = \ln |\operatorname{cosec} x - \cot x|.$
- 109. $\int \operatorname{cosec}^n x \, dx = \frac{1}{n-1} \left\{ -\operatorname{cosec}^{n-2} x \cot x + (n-2) \int \operatorname{cosec}^{n-2} x \, dx \right\} \quad (n \geq 2).$

INTEGRALS CONTAINING EXPONENTIALS AND LOGARITHMS

- 110. $\int e^{ax} \, dx = \frac{1}{a} e^{ax}.$
- 111. $\int a^x \, dx = \frac{1}{\ln a} a^x.$
- 112. $\int x e^{ax} \, dx = \frac{1}{a^2} (ax - 1) e^{ax}.$
- 113. $\int x^n e^{ax} \, dx = \frac{1}{a} x^n e^{ax} - \frac{n}{a} \int x^{n-1} e^{ax} \, dx.$
- 114. $\int \frac{1}{b + ce^{ax}} \, dx = \frac{1}{ab} [ax - \ln(b + ce^{ax})] \quad (ab \neq 0).$
- 115. $\int \frac{1}{be^{ax} + ce^{-ax}} \, dx = \frac{1}{a\sqrt{bc}} \operatorname{Tan}^{-1} \left(e^{ax} \sqrt{\frac{b}{c}} \right) \quad (bc > 0, a \neq 0).$
- 116. $\int e^{ax} \sin bx \, dx = \frac{1}{a^2 + b^2} e^{ax} (a \sin bx - b \cos bx).$
- 117. $\int e^{ax} \cos bx \, dx = \frac{1}{a^2 + b^2} e^{ax} (a \cos bx + b \sin bx).$

118. $\int e^{ax} \sin^n bx \, dx = \frac{1}{a^2 + n^2 b^2} \left\{ e^{ax} \sin^{n-1} bx (a \sin bx - nb \cos bx) \right.$
 $\left. + n(n-1)b^2 \int e^{ax} \sin^{n-2} bx \, dx \right\}.$
119. $\int e^{ax} \cos^n bx \, dx = \frac{1}{a^2 + n^2 b^2} \left\{ e^{ax} \cos^{n-1} bx (a \cos bx + nb \sin bx) \right.$
 $\left. + n(n-1)b^2 \int e^{ax} \cos^{n-2} bx \, dx \right\}.$
120. $\int \ln|x| \, dx = x \ln|x| - x.$
121. $\int x \ln|x| \, dx = \frac{1}{2} x^2 \ln|x| - \frac{1}{4} x^2.$
122. $\int x^n \ln|x| \, dx = \frac{1}{n+1} x^{n+1} \left[\ln|x| - \frac{1}{n+1} \right] \quad (n \neq -1).$
123. $\int \frac{\ln|x|}{x} \, dx = \ln|\ln|x||.$
124. $\int \ln^n|x| \, dx = x \ln^n|x| - n \int \ln^{n-1}|x| \, dx.$
125. $\int x^m \ln^n|x| \, dx = \frac{1}{m+1} \left\{ x^{m+1} \ln^n|x| - n \int x^m \ln^{n-1}|x| \, dx \right\} \quad (m \neq -1).$
126. $\int \frac{\ln^n|x|}{x} \, dx = \frac{1}{n+1} \ln^{n+1}|x|.$

INTEGRALS INVOLVING INVERSE TRIGONOMETRIC FUNCTIONS

127. $\int \sin^{-1} x \, dx = x \sin^{-1} x + \sqrt{1-x^2}.$
128. $\int \cos^{-1} x \, dx = x \cos^{-1} x - \sqrt{1-x^2}.$
129. $\int x^n \sin^{-1} x \, dx = \frac{1}{n+1} \left\{ x^{n+1} \sin^{-1} x - \int \frac{x^{n+1}}{\sqrt{1-x^2}} \, dx \right\} \quad (n \neq -1).$
130. $\int x^n \cos^{-1} x \, dx = \frac{1}{n+1} \left\{ x^{n+1} \cos^{-1} x + \int \frac{x^{n+1}}{\sqrt{1-x^2}} \, dx \right\} \quad (n \neq -1).$
131. $\int \tan^{-1} x \, dx = x \tan^{-1} x - \frac{1}{2} \ln(x^2 + 1).$
132. $\int x^n \tan^{-1} x \, dx = \frac{1}{n+1} \left\{ x^{n+1} \tan^{-1} x - \int \frac{x^{n+1}}{x^2+1} \, dx \right\}.$
133. $\int \sec^{-1} x \, dx = x \sec^{-1} x - \ln|x + \sqrt{x^2-1}|.$
134. $\int \frac{1}{x(ax^n + b)} \, dx = \frac{1}{nb} \ln \left| \frac{x^n}{ax^n + b} \right| \quad (n \neq 0, b \neq 0).$
135. $\int \frac{1}{x\sqrt{ax^n + b}} \, dx = \frac{1}{n\sqrt{b}} \ln \left| \frac{\sqrt{ax^n + b} - \sqrt{b}}{\sqrt{ax^n + b} + \sqrt{b}} \right| \quad (b > 0)$
 $= \frac{2}{n\sqrt{-b}} \sec^{-1} \sqrt{-\frac{ax^n}{b}} \quad (b < 0).$
136. $\int \sqrt{\frac{x+a}{x+b}} \, dx = \sqrt{x+b} \sqrt{x+a} + (a-b) \ln|\sqrt{x+b} + \sqrt{x+a}|.$
137. $\int \sqrt{\frac{a+x}{a-x}} \, dx = a \sin^{-1} \frac{x}{a} - \sqrt{a^2 - x^2}.$