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FISIKA MATEMATIKA BUKU 2

Sri Astutik

FISIKA MATEMATIKA

Meliputi Materi:
Fungsi Kompleks, Koordinat Kurvilinier, Persamaan Diferensial Orde Dua, Metode Deret Kuasa, Fungsi-fungsi Khusus, Persamaan Diferensial Parsial

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FISIKA MATEMATIKA
BUKU 2

Oleh:

Sri Astutik

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BUKU 2

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PRAKATA

Puji syukur kehadirat Tuhan Yang Maha Esa atas segala rahmat serta hidayah-Nya sehingga penulisan buku ajar materi kuliah FISIKA MATEMATIKA (Buku 2) ini dapat terselesaikan. Buku ajar ini tersusun secara sistematis baik digunakan oleh mahasiswa Program Studi Pendidikan Fisika dan mahasiswa Jurusan Fisika. Buku ajar ini dibuat bertujuan sebagai referensi serta jendela pengetahuan bagi mahasiswa dalam memahami konsep-konsep fisis maupun matematis secara sistematis.

Isi dari buku ajar ini disusun berdasarkan materi perkuliahan selama satu semester dengan nilai bobot 4 Sistem Kredit Semester (SKS). Buku ajar ini terdiri dari tujuh bab meliputi materi-materi: (1) Fungsi Kompleks, (2) Koordinat Kurvilinier, (3) Persamaan Differensial Orde Dua, (4) Metode Deret Kuasa, (5) Fungsi-fungsi Khusus, (6) Transformasi Fourier, (7) Persamaan Diferensial Parsial. Analisis dalam buku ajar ini pada setiap bab senantiasa diliputi masalah – masalah analisis matematis dengan materi fisis yang meliputi materi gerak, gelombang, listrik, panas, bahkan fisika modern dan diakhir setiap bab diberikan soal – soal latihan agar dapat membantu mahasiswa dalam memahami materi yang telah dipelajari.

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Penulis mengharapkan buku ajar FISIKA MATEMATIKA (Buku 2) ini dapat menjadi kontribusi secara baik yaitu sebagai pembuka cakrawala untuk memahami materi dari fisika klasik maupun materi fisika lanjut baik secara kontekstual maupun matematis.

Jember, Oktober 2017

Dr. Sri Astutik, M.Si

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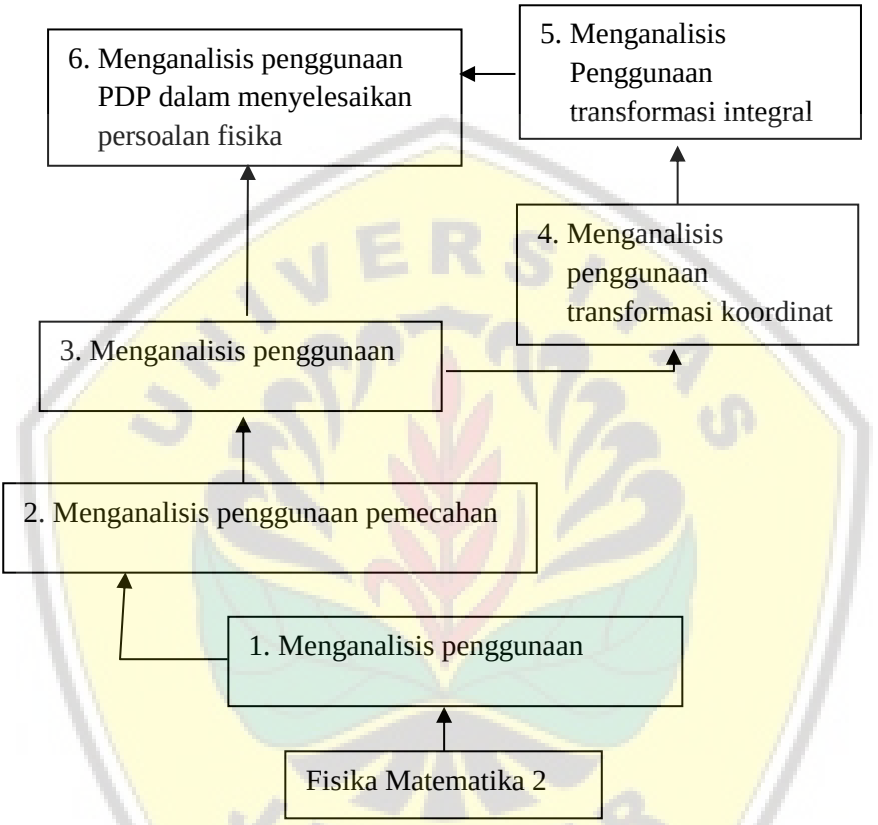
PETA KONSEP MATERI FISIKA MATEMATIKA II



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SIMBOL DAN NAMA ABJAD

α	A	Alpha
β	B	Beta
γ	Γ	Gamma
δ	Δ	Delta
ε	E	Epsilon
ζ	Z	Zeta
η	H	Eta
θ	Θ	Theta
ι	I	Iota
κ	K	Kappa
λ	Λ	Lambda
μ	M	Mu
ν	N	Nu
ξ	Ξ	Xi
ο	O	Omicron
π	Π	Pi
ρ	P	Rho
σ	Σ	Sigma
τ	T	Tau
υ	ϒ	Upsilon
ϕ	Φ	Phi
χ	X	Chi
ψ	Ψ	Psi
ω	Ω	Omega

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KONSTANTA DAN ANGKA-ANGKA PENTING DALAM FISIKA

Konstanta Avogadro (N_A)	6.02×10^{26} kmole^{-1}
Konstanta Boltzmann (k)	1.38×10^{-23} J·°K^{-1}
Muatan Elektron (e)	1.602×10^{-19} C
Elektron, muatan/massa (e/m_e)	1.760×10^{11} C·kg^{-1}
Massa diam Elektron (m_e)	9.11×10^{-31} kg (0.511 MeV)
Konstanta Faraday (F)	9.65×10^{4} C·mole^{-1}
Konstanta Gas (R)	8.31×10^{3} J·°K^{-1} kmole^{-1}
Gas (ideal) pada volume normal (V_O)	22.4 m^3·kmole^{-1}
Konstanta Gravitasi (G)	6.67×10^{-11} N·m^2·kg^{-2}
Massa diam Atom Hidrogen (m_H)	1.673×10^{-27} kg (938.8 MeV)
Massa diam Neutron (m_n)	1.675×10^{-27} kg (939.6 MeV)
Konstanta Planck (h)	6.63×10^{-34} J·s
Massa diam Proton (m_p)	1.673×10^{-27} kg (938.3 MeV)
Kecepatan Cahaya (c)	3.00×10^{8} m·s^{-1}

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LAMPIRAN 1

RUMUS TURUNAN

1. $\frac{d}{dx}(a) = 0$
2. $\frac{d}{dx}(x) = 1$
3. $\frac{d}{dx}(au) = a\frac{du}{dx}$
4. $\frac{d}{dx}(u+v) = \frac{du}{dx} + \frac{dv}{dx}$
5. $\frac{d}{dx}(uv) = u\frac{du}{dx} + v\frac{dv}{dx}$
6. $\frac{d}{dx}(u/v) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$
7. $\frac{d}{dx}(u^n) = nu^{n-1}\frac{du}{dx}$
8. $\frac{d}{dx}e^n = e^n\frac{du}{dx}$
9. $\frac{d}{dx}a^n = (\log_c a)a^n\frac{du}{dx}$
10. $\frac{d}{dx}\log_e u = (1/u)\frac{du}{dx}$
11. $\frac{d}{dx}\log_a u = (\log_a e)^n(1/u)\frac{du}{dx}$
12. $\frac{d}{dx}u^v = vu^{v-1}\frac{du}{dx} + u^v(\log_e u)\frac{dv}{dx}$
13. $\frac{d}{dx}\sin u = \cos u\frac{du}{dx}$
14. $\frac{d}{dx}\cos u = -\sin u\frac{du}{dx}$
15. $\frac{d}{dx}\tan u = \sec^2 u\frac{du}{dx}$
16. $\frac{d}{dx}\mathrm{ctn}\, u = -\csc^2 u\frac{du}{dx}$
17. $\frac{d}{dx}\sec u = \sec u\tan u\frac{du}{dx}$
18. $\frac{d}{dx}\csc u = -csu\ \mathrm{ctn}\, u\frac{du}{dx}$
19. $\frac{d}{dx}\sin^{-1}u = \frac{1}{\sqrt{1-u^2}}\frac{du}{dx}$, $(-\frac{1}{2}\pi \le sin^{-1}u \le \frac{1}{2}\pi)$
20. $\frac{d}{dx}\cos^{-1}u = \frac{-1}{\sqrt{1-u^2}}\frac{du}{dx}$, $(-\frac{1}{2}\pi \le sin^{-1}u \le \frac{1}{2}\pi)$
21. $\frac{d}{dx}\tan^{-1}u = \frac{1}{1-u^2}\frac{du}{dx}$
22. $\frac{d}{dx}ctn^{-1}u = \frac{-1}{1-u^2}\frac{du}{dx}$
23. $\frac{d}{dx}\sec^{-1}u = \frac{-1}{u\sqrt{u^2-1}}\frac{du}{dx}$, $(\pi \le \sec^{-1}u \le -\frac{1}{2}\pi\,; 0 \le \sec^{-1}u \le \frac{1}{2}\pi)$
24. $\frac{d}{dx}\csc^{-1}u = \frac{-1}{\sqrt{u^2-1}}\frac{du}{dx}$, $(-\pi \le \csc^{-1}u \le -\frac{1}{2}\pi\,; 0 \le \csc^{-1}u \le \frac{1}{2}\pi)$

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25. $\frac{d}{dx}\sinh u = \cosh u \frac{du}{dx}$
26. $\frac{d}{dx}\cosh u = \sinh u \frac{du}{dx}$
27. $\frac{d}{dx}\tanh u = \operatorname{sech}^2 u \frac{du}{dx}$
28. $\frac{d}{dx}\operatorname{ctnh} u = -\operatorname{csh}^2 u \frac{du}{dx}$
29. $\frac{d}{dx}\operatorname{sech} u = -\operatorname{sech} u \tanh u \frac{du}{dx}$
30. $\frac{d}{dx}\operatorname{csch} u = -c\operatorname{sch} u \operatorname{ctnh} u \frac{du}{dx}$
31. $\frac{d}{dx}\sinh^{-1} u = \frac{1}{\sqrt{u^2+1}}\frac{du}{dx}$
32. $\frac{d}{dx}\cosh^{-1} u = \frac{1}{\sqrt{u^2-1}}\frac{du}{dx}$
33. $\frac{d}{dx}\tanh^{-1} u = \frac{1}{u^2-1}\frac{du}{dx}$
34. $\frac{d}{dx}\operatorname{ctnh}^{-1} u = \frac{-1}{u^2-1}\frac{du}{dx}$
35. $\frac{d}{dx}\operatorname{sech}^{-1} u = \frac{1}{u\sqrt{1-u^2}}\frac{du}{dx}$

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LAMPIRAN 2

RUMUS INTEGRAL

1. $\int dx = x + c$
2. $\int x^n = \frac{x^{n+1}}{n+1} + c, (n \neq 1)$
3. $\int \frac{dx}{x} = \log x + c$
4. $\int e^x dx = e^x + c$
5. $\int a^x dx = \frac{a^x}{\log a} + c$
6. $\int \sin x \, dx = -\cos x + c$
7. $\int \cos x \, dx = \sin x + c$
8. $\int \tan x \, dx = -\log \cos x + c$
9. $\int \sec^2 x \, dx = \tan x + c$
10. $\int \csc^2 x \, dx = -\text{ctn}\, x + c$
11. $\int \sec^2 x \tan x \;\; dx = -\sec x + c$
12. $\int \sin^2 x \, dx = \frac{1}{2}x - \frac{1}{2}\sin x \cos x + c$
13. $\int \cos^2 x \, dx = \frac{1}{2}x + \frac{1}{2}\sin x \cos x + c$
14. $\int \log x \;\; dx = x \log x - x + c$
15. $\int a^2 \log a \;\; dx = \;\; a^2 + c \, , (a > 0)$
16. $\int \frac{dx}{a^2+x^2} = \frac{1}{a}\text{arc}\tan\frac{x}{a} + c$
17. $\int \frac{dx}{a^2+x^2} = \frac{1}{2a}\log\frac{x-a}{x+a} + c \, , (x^2 > a^2)$
    $= \frac{1}{2a}\log\frac{x-a}{x+a} + c \, , (x^2 < a^2)$
18. $\int \frac{dx}{\sqrt{x^2+a^2}} = \log\left(x + \sqrt{\sqrt{x^2+a^2}}\right) + c$
19. $\int \frac{dx}{\sqrt{x^2-a^2}} = \log\left(x + \sqrt{\sqrt{x^2-a^2}}\right) + c$
20. $\int \frac{dx}{\sqrt{a^2-x^2}} = arc\sin\frac{x}{a} + c$
21. $\int \sqrt{a^2-x^2} \;\; dx = 1/2\left\{x\sqrt{a^2-x^2} + a^2 arc\sin\frac{x}{a}\right\} + c$
22. $\int \sqrt{a^2+x^2} \;\; dx = 1/2\left\{x\sqrt{a^2+x^2} + a^2\log\left(x+\sqrt{a^2+x^2}\right)\right\} + c$
23. $\int \sqrt{x^2-a^2} \;\; dx = 1/2\left\{x\sqrt{x^2-a^2} - a^2\log\left(x+\sqrt{x^2-a^2}\right)\right\} + c$
24. $\int (ax+b)^m dx = \frac{(ax+b)^{m+1}}{a(m+1)} \;, \;\; (m \neq 1)$
25. $\int (ax+b)^m dx = \frac{(ax+b)^{m+2}}{a^2(m+2)} - \frac{b(ax+b)^{m+1}}{a^2(m+1)} \;, (m \neq -1, -2)$
26. $\int \frac{dx}{ax+b} = \frac{1}{a}\log(ax+b)$

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27. $\int \frac{dx}{(ax+b)^2} = \frac{1}{a(ax+b)}$
28. $\int \frac{dx}{(ax+b)^3} = \frac{1}{2a(ax+b)^2}$
29. $\int \frac{xdx}{ax+b} = \frac{x}{a} - \frac{x}{a}\log(ax+b)$
30. $\int \frac{xdx}{(ax+b)^2} = \frac{b}{a^2(ax+b)}\frac{2}{a^2}\log(ax+b)$
31. $\int \frac{xdx}{(ax+b)^3} = \frac{b}{2a^2(ax+b)}\frac{2}{a^2} - \frac{b}{a^2(ax+b)}$
32. $\int x^2(ax+b)^m dx = \frac{1}{a^3}\left[\frac{(ax+b)^{m+3}}{m+3} - \frac{2b(ax+b)^{m+2}}{m+2} + \frac{b^2(ax+b)^{m+2}}{m+1}\right]$
33. $\int \frac{x^2dx}{ax+b} = \frac{1}{a^3}\left[\frac{1}{2}(ax+b)^2 - 2b(ax+b) + b^2 log(ax+b)\right]$
34. $\int \frac{x^2dx}{(ax+b)^2} = \frac{1}{a^3}\left[(ax+b) - \frac{b^2}{ax+b} - 2b\log(ax+b)\right]$
35. $\int \frac{x^2dx}{(ax+b)^3} = \frac{1}{a^3}\left[\log(ax+b) - \frac{2b}{ax+b} - \frac{b^2}{2(ax+b)^2}\right]$
36. $\int \frac{dx}{x(ax+b)} = \frac{1}{b}\log\left(\frac{x}{ax+b}\right)$
37. $\int \frac{dx}{x^3(ax+b)} = -\frac{1}{bx} + \frac{a}{b^2}\log\left(\frac{ax+b}{x}\right)$
38. $\int \frac{dx}{x(ax+b)^2} = -\frac{1}{b(ax+b)} - \frac{1}{b^2}\log\left(\frac{ax+b}{x}\right)$
39. $\int \frac{dx}{x^2(ax+b)^2} = -\frac{2ax+b}{b^2x(ax+b)} - \frac{2}{b^3}\log\left(\frac{ax+b}{x}\right)$
40. $\int x^m(ax+b)^n dx = \frac{1}{a(m+n+1)}[x^m(ax+b)^{n+1} - mb\int x^{m-1}(ax+b)^n dx]$
$= \frac{1}{m+n+1}\left[x^m(ax+b)^n + nb\int x^m(ax+b)^{n-1}dx\right]$ $(m > 0, m+n+1 \neq 0)$
41. $\int \frac{dx}{(ax+b)(cx+d)} = \frac{1}{bc-ad}\log\left(\frac{cx+d}{ax+b}\right)$
42. $\int \frac{xdx}{(ax+b)(cx+d)} = \frac{1}{bc-ad}\left[\frac{b}{a}\log(ax+b) - \frac{d}{c}\log(cx+d)\right]$
43. $\int \frac{dx}{(ax+b)^2(cx+d)} = \frac{1}{bc-ad}\left[\frac{1}{(ax+b)} + \frac{c}{bc-ad}\log\frac{(cx+d)}{(ax+b)}\right]$
44. $\int \frac{xdx}{(ax+b)^2(cx+d)} = \frac{1}{bc-ad}\left[-\frac{b}{a(ax+b)} + \frac{d}{bc-ad}\log\frac{(cx+d)}{(ax+b)}\right]$
45. $\int \frac{x^2dx}{(ax+b)^2(cx+d)} = \frac{b^2}{a^2(bc-ad)(ax+bc)} + \frac{1}{(bc-ad)^2}\left[\frac{d^2}{c}log|cx+d| + \frac{b(bc-2ad)}{a^2}\log(ax+b)\right]$
46. $\int \frac{ax}{cx+d}dx = \frac{ax}{c} + \frac{bc-ad}{c^2}\log(cx+d)$
47. $\int (ax+b)^m(cx+d)^n dx$

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$$= \frac{1}{a(m+n+1)}\left[(ax+b)^{m+1}(cx+d)^{n} - n(bc-ad)\int (ax+b)^{m}(cx+d)^{n-1}dx\right]$$

48. $\int \sqrt{ax+b}\,dx = \frac{2}{3a}\sqrt{(ax+b)^3}$
49. $\int x\sqrt{ax+b}dx = \frac{2(3ax-2b)}{15a^2}\sqrt{(ax+b)^3}$
50. $\int x^2\sqrt{ax+b}\,dx = \frac{2\left(15a^2x^2-12abx+8b^2\right)}{105a^3}\sqrt{(ax+b)^3}$
51. $\int x^m\sqrt{ax+b}\,dx = \frac{2}{a(2m+3)}\left[x^m\sqrt{(ax+b)^3} - mb\int x^{m-1}\sqrt{ax+b}\,dx\right]$
52. $\int \frac{(ax+b)^{\frac{m}{2}}dx}{a(2m+3)} = a\int (ax+b)^{\frac{m-2}{2}}dx + b\int \frac{(ax+b)^{\frac{m-2}{2}}dx}{x}$
53. $\int \frac{dx}{x(ax+b)^{\frac{m}{2}}} = \frac{1}{b}\int \frac{dx}{x(ax+b)^{\frac{m-2}{2}}} - \frac{a}{b}\int \frac{dx}{(ax+b)^{\frac{m}{2}}}$
54. $\int \frac{\sqrt{ax+b}\,dx}{cx+d} = \frac{2\sqrt{ax+b}}{c} + \frac{1}{c}\sqrt{\frac{bc-ad}{c}}\log\left|\frac{\sqrt{c(ax-b)}-\sqrt{bc-ad}}{\sqrt{c(ax-b)}+\sqrt{bc-ad}}\right|$
55. $\int \frac{\sqrt{ax+b}\,dx}{cx+d} = \frac{2\sqrt{ax+b}}{c} - \frac{2}{c}\frac{\sqrt{ad-bc}}{c}\,arc\tan\sqrt{\frac{c(ax+b)}{ad-bc}}\,,(c>0, bc<ad)$
56. $\int \frac{(cx+d)dx}{\sqrt{ax+b}} = \frac{2}{3a^2}(3ad-2bc+acx)\sqrt{ax+b}$
57. $\int \frac{dx}{(cx+d)\sqrt{ax+b}} = \frac{2}{\sqrt{c}\sqrt{ad-bc}}arc\tan\sqrt{\frac{c(ax+b)}{ad-bc}}$
58. $\int \frac{dx}{(cx-d)\sqrt{ax+b}} = \frac{2}{\sqrt{c}\sqrt{bc-ad}}\log\left|\frac{\sqrt{c(ax+b)}-\sqrt{bc-ad}}{\sqrt{c(ax+b)}+\sqrt{bc-ad}}\right|$
59. $\int \sqrt{ax+b}\sqrt{cx+d}\,dx = \int \sqrt{acx^2+(ad+bc)x+bd}\,dx$
60. $\int \frac{\sqrt{ax+b}}{x} = 2\sqrt{ax+b} + \sqrt{b}\log\left(\frac{\sqrt{ax+b}+\sqrt{b}}{\sqrt{ax+b}-\sqrt{b}}\right)\,,\ (b>0)$
61. $\int \frac{\sqrt{ax+b}}{x} = 2\sqrt{ax+b} - 2\sqrt{-b}\,arc\tan\left(\frac{\sqrt{ax+b}}{\sqrt{-b}}\right)$
62. $\int \frac{\sqrt{ax+b}}{x^2}dx = -\frac{\sqrt{ax+b}}{x^2} + \frac{a}{2}\int \frac{dx}{x\sqrt{ax+b}}$
63. $\int \frac{\sqrt{ax+b}\,dx}{x^2} = \left[\frac{\sqrt{(ax+b)^3}}{x^{m-1}} + \frac{(2m-5)}{2}\int \frac{\sqrt{ax+b}\,dx}{x^{m-1}}\right]\,,\ m\neq 1$
64. $\int \frac{dx}{\sqrt{ax+b}} = \frac{a\sqrt{ax+b}}{a}$
65. $\int \frac{x\,dx}{\sqrt{ax+b}} = \frac{2(ax-2b)\sqrt{ax+b}}{3a^3}$
66. $\int \frac{x^2\,dx}{\sqrt{ax+b}} = \frac{2\left(3a^3x^2-4abx+8b^2\right)\sqrt{ax+b}}{15a^3}$

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67. $\int \frac{x^m\,dx}{\sqrt{ax+b}} = \frac{2}{a(2m+1)}\left[x^m\sqrt{ax+b} - mb\int \frac{x^{m-1}\,dx}{\sqrt{ax+b}}\right]\ ,\ \left(m \neq -\frac{1}{2}\right)$

68. $\int \frac{dx}{x\sqrt{ax+b}} = \frac{1}{\sqrt{b}}\log\left|\frac{\sqrt{ax+b}-\sqrt{b}}{\sqrt{ax+b}+\sqrt{c}}\right|\ ,\ (b>0)$

69. $\int \frac{dx}{x\sqrt{ax+b}} = \frac{2}{\sqrt{-b}}\arctan\sqrt{\frac{ax+b}{-b}}\ ,\ (b<0)$

70. $\int \frac{dx}{x^2\sqrt{ax+b}} = \frac{\sqrt{ax+b}}{bx} - \frac{a}{2b}\int \frac{dx}{x\sqrt{ax+b}}$

71. $\int \frac{dx}{x^m\sqrt{ax+b}} = -\frac{\sqrt{ax+b}}{(m-1)bx^{m-1}} - \frac{(2m-3)a}{(2m-2)b}\int \frac{dx}{m^{m-1}\sqrt{ax+b}}\ ,\ (m \neq 1)$

72. $\int (ax+b)^{\pm\frac{m}{2}}\,dx = \frac{2(ax+b)^{\frac{2\pm m}{2}}}{a(2\pm m)}$

73. $\int x(ax+b)^{\pm\frac{m}{2}}\,dx = \frac{2}{a^2}\left[\frac{(ax+b)^{\pm\frac{4\pm m}{2}}}{4\pm m} - \frac{b(ax+b)^{\pm\frac{2\pm m}{2}}}{2\pm m}\right]$

74. $\int \frac{dx}{ax^2+c} = \frac{1}{\sqrt{ac}}arc\tan\left(x\sqrt{\frac{a}{c}}\right)\quad (a>0, c>0)$

75. $\int \frac{dx}{ax^2+c} = \frac{1}{2\sqrt{-ac}}\log\left(\frac{x\sqrt{a}-\sqrt{-c}}{x\sqrt{a}+\sqrt{-c}}\right)\ (a>0, c<0)$

76. $\int \frac{x\,dx}{ax^2+c} = \frac{1}{2\sqrt{-ac}}\log\left(\frac{x\sqrt{a}+\sqrt{-c}}{x\sqrt{a}-\sqrt{-c}}\right)\ (a<0, c<0)$

77. $\int \frac{x\,dx}{ax^2+c} = \frac{1}{2a}\log(ax^2+c)$

78. $\int \frac{x^2\,dx}{ax^2+c} = \frac{x}{a} - \frac{c}{a}\int \frac{dx}{ax^2+c}$

79. $\int \frac{x^m\,dx}{ax^2+c} = \frac{x^{m+1}}{a(m-1)} - \frac{c}{a}\int \frac{x^{m+2}dx}{ax^2+c}\ ,\ (m \neq 1)$

80. $\int \frac{dx}{x(ax^2+c)} = \frac{1}{2c}\log\left(\frac{ax^2}{ax^2+c}\right)$

81. $\int \frac{dx}{x(ax^2+c)} = \frac{1}{2c}\log\left(\frac{ax^2}{ax^2+c}\right)$

82. $\int \frac{dx}{x^m(ax^2+c)} = -\frac{1}{c(m-1)x^{m+1}} - \frac{a}{c}\int \frac{dx}{x^{m-2}(ax^2+c)}\ ,\ (m \neq 1)$

83. $\int \frac{dx}{(ax^2+c)^m} = \frac{1}{2(m-1)c}\cdot\frac{x}{(ax^2+c)^{m-1}} + \frac{2m-3}{2(m-1)c}\int \frac{dx}{(ax^2+c)^{m-1}}\ ,\ (m \neq 1)$

84. $\int \frac{x\,dx}{(ax^2+c)^m} = -\frac{1}{2a(m-1)(ax^2+c)^{m-1}}\ ,\ (m \neq 1)$

85. $\int \frac{x^2\,dx}{(ax^2+c)^m} = -\frac{1}{2a(m-1)(ax^2+c)^{m-1}} + \frac{1}{2a(m-1)}\int \frac{dx}{(ax^2+c)^{m-1}}\ ,\ (m \neq 1)$

86. $\int \frac{dx}{x(ax^2+c)^m} = -\frac{1}{2c(m-1)(ax^2+c)^{m-1}} + \frac{1}{c}\int \frac{dx}{x(ax^2+c)^{m-1}}\ ,\ (m \neq 1)$

87. $\int \frac{dx}{x^2(ax^2+c)^m} = \frac{1}{c}\int \frac{dx}{x^2(ax^2+c)^{m-1}} - \frac{a}{c}\int \frac{dx}{(ax^2+c)^{m-1}}$

88. $\int \frac{dx}{ax^2+bx+c} = \frac{1}{\sqrt{b^2-4ac}}\log\frac{2ax+b-\sqrt{b^2-4ac}}{2ax+b+\sqrt{b^2-4ac}}\ ,\ (b^2>4ac)$

89. $\int \frac{dx}{ax^2+bx+c} = \frac{2}{\sqrt{4ac-b^2}}\tan^{-1}\frac{2ax+b}{\sqrt{4ac-b^2}}\ ,\ (b^2<4ac)$

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90. $\int \frac{dx}{ax^2+bx+c} = -\frac{2}{2ax+b}$, $(b^2 = 4ac)$
91. $\int \frac{dx}{(ax^2+bx+c)^{n+1}} = -\frac{2ax+b}{n(4ac-b^2)(ax^2+bx+c)^n} + \frac{2(2n-1)a}{n(4ac-b^2)} \int \frac{dx}{(ax^2+bx+c)^n}$
92. $\int \frac{x\,dx}{ax^2+bx+c} = \frac{1}{2a} \log(ax^2+bx+c) - \frac{b}{2a} \int \frac{dx}{ax^2+bx+c}$
93. $\int \frac{x^2\,dx}{ax^2+bx+c} = \frac{x}{a} - \frac{1}{2a^2} \log(ax^2+bx+c) - \frac{b^2-2ac}{2a^2} \int \frac{dx}{ax^2+bx+c}$
94. $\int \frac{x^n\,dx}{ax^2+bx+c} = \frac{x^{n-1}}{(n-1)a} - \frac{c}{a} \int \frac{x^n-2\,dx}{ax^2+bx+c} - \frac{b}{a} \int \frac{x^{n-1}\,dx}{ax^2+bx+c}$
95. $\int \frac{x\,dx}{(ax^2+bx+c)^{n+1}} = -\frac{-(2c+bx)}{n(4ac-b^2)(ax^2+bx+c)^n} - \frac{b(2n-1)}{n(4ac-b^2)} \int \frac{dx}{(ax^2+bx+c)^n}$
96. $\int \frac{dx}{x(ax^2+bx+c)} = \frac{1}{2c} \log\left(\frac{x^2}{x^2+bx+c}\right) - \frac{b}{2c} \int \frac{dx}{(ax^2+bx+c)}$
97. $\int \frac{dx}{x^2(ax^2+bx+c)} = \frac{b}{2c} \log\left(\frac{ax^2+bx+c}{x^2}\right) - \frac{1}{cx} + \left(\frac{b^2}{2c^2} - \frac{a}{c}\right) \int \frac{dx}{(ax^2+bx+c)}$
98. $\int \sqrt{2ax-x^2}dx = \frac{x-a}{2}\sqrt{2ax-x^2} + \frac{a^2}{2} \arcsin\left(\frac{x-a}{a}\right)$
99. $\int x\sqrt{2ax-x^2}dx = -\frac{3a^2+ax-2x^2}{6}\sqrt{2ax-x^2} + \frac{a^3}{2} \arcsin\left(\frac{x-a}{a}\right)$
100. $\int x^m\sqrt{2ax-x^2}dx = -\frac{3x^{m-1}\sqrt{(2ax-x^2)^3}}{m+2} + \frac{a(2m+1)}{m+2} \int x^{m-1}\sqrt{2ax-x^2}\,dx$
101. $\int \frac{\sqrt{2ax-x^2}dx}{x^m} = \sqrt{2ax-x^2} + a \arcsin\left(\frac{x-a}{a}\right)$
102. $\int \frac{\sqrt{2ax-x^2}dx}{x^m} = -\frac{\sqrt{(2ax-x^2)^3}}{a(2m-3)x^m} + \frac{m-3}{a(2m-)} \int \frac{\sqrt{2ax-x^2}\,dx}{x^{m-1}}$
103. $\int \frac{dx}{\sqrt{2ax-x^2}} = \arcsin\left(\frac{x-a}{a}\right)$
104. $\int \frac{dx}{\sqrt{2ax-x^2}} = \sqrt{2ax-x^2} + a \arcsin\left(\frac{x-a}{a}\right)$
105. $\int \frac{x^m\,dx}{\sqrt{2ax-x^2}} = \frac{x^{m-1}\sqrt{2ax-x^2}}{m} + \frac{a(2m-1)}{m} \int \frac{x^{m-1}dx}{\sqrt{2ax-x^2}}$
106. $\int \frac{dx}{x\sqrt{2ax-x^2}} = -\frac{\sqrt{2ax-x^2}}{ax}$
107. $\int \frac{dx}{x^m\sqrt{2ax-x^2}} = -\frac{\sqrt{2ax-x^2}}{ax} + \frac{m-1}{a(2m-1)} \int \frac{dx}{x^{m-1}\sqrt{2ax-x^2}}$
108. $\int \sqrt{a^2-x^2}\,dx = \frac{1}{2}\left(x\sqrt{a^2-x^2} + a^2 \arcsin\frac{x}{a}\right)$
109. $\int x\sqrt{a^2-x^2}\,dx = -\frac{1}{3}\sqrt{(a^2-x^2)^3}$
110. $\int x^2\sqrt{a^2-x^2}\,dx = -\frac{x}{4}\sqrt{(a^2-x^2)^3} + \frac{a^3}{8}\left(x\sqrt{a^2-x^2} + a^2 \arcsin\frac{x}{a}\right)$
111. $\int x^3\sqrt{a^2-x^2}\,dx = \left(-\frac{1}{5}x^2 - \frac{2}{15}a^2\right)\sqrt{(a^2-x^2)^3}$

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112. $\int \frac{\sqrt{a^2-x^2}}{x} = \sqrt{a^2-x^2} - a\log\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|$
113. $\int \frac{\sqrt{a^2-x^2}}{x^2} = \frac{\sqrt{a^2-x^2}}{2x^2} - \arcsin\frac{x}{a}$
114. $\int \frac{\sqrt{a^2-x^2}}{x^3} = \frac{\sqrt{a^2-x^2}}{2x^2} + \frac{1}{2a}\log\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|$
115. $\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin\frac{x}{a}$
116. $\int \frac{x\,dx}{\sqrt{a^2-x^2}} = -\sqrt{a^2-x^2}$
117. $\int \frac{x^2\,dx}{\sqrt{a^2-x^2}} = -\frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}\arcsin\frac{x}{a}$
118. $\int \frac{x^3\,dx}{\sqrt{a^2-x^2}} = \frac{1}{3}\sqrt{(a^2-x^2)^3} - a^2\sqrt{a^2-x^2}$
119. $\int \frac{dx}{x\sqrt{a^2-x^2}} = -\frac{1}{a}\log\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|$
120. $\int \frac{dx}{x^2\sqrt{a^2-x^2}} = -\sqrt{\frac{a^2-x^2}{a^2x}}$
121. $\int \frac{dx}{x^3\sqrt{a^2-x^2}} = -\frac{\sqrt{a^2-x^2}}{2a^2x^2} - \frac{1}{2a^3}\log\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|$
122. $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|$
123. $\int x\sqrt{x^2-a^2}\,dx = \frac{1}{3}\sqrt{(x^2-a^2)^3}$
124. $\int x^2\sqrt{x^2-a^2}\,dx = \frac{x}{4}\sqrt{(x^2-a^2)^3} + \frac{a^2x}{8}\sqrt{x^2-a^2} - \frac{a^4}{8}\log\left|x+\sqrt{x^3-a^2}\right|$
125. $\int x^3\sqrt{x^2-a^2}\,dx = \frac{1}{5}\sqrt{(x^2-a^2)^5} + \frac{a^2}{3}\sqrt{(x^2-a^2)^3}$
126. $\int \frac{\sqrt{x^2-a^2}}{x}dx = \sqrt{x^2-a^2} - a\arccos\frac{a}{x}$
127. $\int \frac{\sqrt{x^2-a^2}\,dx}{x^2} = \frac{-1}{x}\sqrt{x^2-a^2} + log\left|x+\sqrt{x^2-a^2}\right|$
128. $\int \frac{\sqrt{x^2-a^2}\,dx}{x^2} = \frac{\sqrt{x^2-a^2}}{2x^2} + \frac{1}{2a}\arccos\frac{a}{x}$
129. $\int \frac{dx}{\sqrt{x^2-a^2}} = \log\left|x+\sqrt{x^2-a^2}\right|$
130. $\int \frac{x\,dx}{\sqrt{x^2-a^2}} = \sqrt{x^2-a^2}$
131. $\int \frac{x^2\,dx}{\sqrt{x^2-a^2}} = \frac{x}{2}\sqrt{x^2-a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|$
132. $\int \frac{x^3\,dx}{\sqrt{x^2-a^2}} = \frac{1}{2}\sqrt{(x^2-a^2)^3} + a^2\sqrt{x^2-a^2}$
133. $\int \frac{dx}{x\sqrt{x^2-a^2}} = \frac{1}{a}\arccos\frac{a}{x}$
134. $\int \frac{dx}{x^2\sqrt{x^2-a^2}} = \frac{\sqrt{x^2-a^2}}{a^2x}$

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135. $\int \frac{dx}{x^3\sqrt{x^2-a^2}} = \frac{\sqrt{x^2-a^2}}{2a^2x} + \frac{1}{2a}\arccos\frac{a}{x}$

136. $\int \sqrt{a^2+x^2} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left(x+\sqrt{x^2-a^2}\right)$

137. $\int x\sqrt{a^2+x^2}\,dx = \frac{1}{3}\sqrt{(x^2+a^2)^3}$

138. $\int x^2\sqrt{a^2+x^2}\,dx = \frac{x}{4}\sqrt{(x^2+a^2)^3} - \frac{a^2x}{8}\sqrt{x^2+a^2} - \frac{a^4}{8}\log\left|x+\sqrt{x^3-a^2}\right|$

139. $\int x^3\sqrt{a^2+x^2}\,dx = \left(\frac{1^2}{5} - \frac{2}{15}a^2\right)\sqrt{(x^2+a^2)^3}$

140. $\int \frac{\sqrt{x^2-+}}{x}dx = \sqrt{x^2-a^2} - a\arccos\frac{a}{x}$

141. $\int \frac{\sqrt{a^2+x^2}\,dx}{x^2} = -\frac{\sqrt{a^2+x^2}}{x^2} - \log\left(x+\sqrt{a^2+x^2}\right)$

142. $\int \frac{\sqrt{a^2+x^2}\,dx}{x^3} = -\frac{\sqrt{a^2+x^2}}{2x^2} - \frac{1}{2a}\left|\frac{a+\sqrt{a^2+x^2}}{x}\right|$

143. $\int \frac{dx}{\sqrt{a^2+x^2}} = \log\left(x+\sqrt{a^2+x^2}\right)$

144. $\int \frac{xdx}{\sqrt{a^2+x^2}} = \sqrt{a^2+x^3}$

145. $\int \frac{x^2\,dx}{\sqrt{a^2+x^2}} = \frac{x}{a}\sqrt{a^2+x^2} - \frac{a^2}{2}\log\left(x+\sqrt{a^2+x^2}\right)$

146. $\int \frac{x^3\,dx}{\sqrt{a^2+x^2}} = \frac{1}{3}\sqrt{(a^2+x^2)^3} - a^2\sqrt{a^2+x^2}$

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

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

149. $\int \frac{dx}{x^3\sqrt{a^2+x^2}} = \frac{\sqrt{a^2+x^2}}{2a^2x} + \frac{1}{2a^3}\log\left|\frac{a+\sqrt{a^2+x^2}}{x}\right|$

150. $\int \frac{dx}{\sqrt{ax^2+bx+c}} = \frac{1}{\sqrt{a}}\log\left(2ax+b+2\sqrt{a}\sqrt{ax^2+bx+c}\right)$, $a > 0$

151. $\int \frac{dx}{\sqrt{ax^2+bx+c}} = \frac{1}{\sqrt{a}}\sin^{-1} - \frac{2ax-b}{\sqrt{b^2-4ac}}$, $a < 0$

152. $\int \frac{x\,dx}{\sqrt{ax^2+bx+c}} = \frac{\sqrt{ax^2+bx+c}}{a} - \frac{b}{2a}\int \frac{dx}{\sqrt{ax^2+bx+c}}$

153. $\int \frac{x^n\,dx}{\sqrt{ax^2+bx+c}} = \frac{x^{n-1}}{an}\sqrt{ax^2+bx+c} - \frac{b(2n-1)}{2an}\int \frac{x^{n-1}dx}{\sqrt{ax^2+bx+c}} - \frac{c(n-1)}{an}\int \frac{x^{n-2}dx}{\sqrt{ax^2+bx+c}}$

154. $\int \sqrt{ax^2+bx+c}\,dx = \frac{2ax+b}{4a}\sqrt{ax^2+bx+c} + \frac{4ac-b^2}{8a}\int \frac{dx}{\sqrt{ax^2+bx+c}}$

155. $\int x\sqrt{ax^2+bx+c}\,dx = \frac{(ax^2+bx+c)^{\frac{3}{2}}}{3a} - \frac{b}{2a}\int \sqrt{ax^2+bx+c}$

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156. $\int x^2\sqrt{ax^2+bx+c}\,dx = \left(x-\frac{5b}{6a}\right)\frac{(ax^2+bx+c)^{\frac{3}{2}}}{4a} + \frac{(5b^2-4ac)}{16a^2}\int\sqrt{ax^2+bx+c}$

157. $\int\frac{dx}{x\sqrt{ax^2+bx+c}} = -\frac{1}{\sqrt{c}}\log\left(\frac{\sqrt{ax^2+bx+c}+\sqrt{c}}{x}+\frac{b}{2\sqrt{c}}\right)\ ,\ c>0$

158. $\int\frac{dx}{x\sqrt{ax^2+bx+c}} = -\frac{1}{\sqrt{c}}\sin^{-1}\frac{bx+2c}{x\sqrt{b^2-4ac}}\ ,\ c<0$

159. $\int\frac{dx}{x\sqrt{ax^2+bx}} = -\frac{2}{bx}\sqrt{ax^2+bx}\ ,\ c=0$

160. $\int\frac{dx}{x^n\sqrt{ax^2+bx+c}} = -\frac{\sqrt{ax^2+bx+c}}{c(n-1)x^{n-1}} + \frac{b(3-2n)}{2c(n-1)}\int\frac{dx}{x^{n-1}\sqrt{ax^2+bx+c}} + \frac{a(2-n)}{c(n-1)}\int\frac{dx}{x^{n-2}\sqrt{ax^2+bx+c}}$

161. $\int\frac{dx}{(ax^2+bx+c)^{\frac{3}{2}}} = -\frac{2(2ax+b)}{(b^2-4ac)\sqrt{ax^2+bx+c}}\ ,\ b^2\neq 4c$

162. $\int\frac{dx}{(ax^2+bx+c)^{\frac{3}{2}}} = -\frac{1}{2\sqrt{a^3}\left(x+\frac{b}{2a}\right)^2}\ ,\ b^2=4c$

163. $\int\sqrt{\frac{a+x}{b+x}}\,dx = \sqrt{(a+x)(b+x)} + (a-b)\log\left(\sqrt{a+x}+\sqrt{b+x}\right)$
$(a+x>0\ dan\ b+x>0)$

164. $\int\sqrt{\frac{a+x}{b-x}}\,dx = \sqrt{(a+x)(b+x)} - (a+b)\arcsin\sqrt{\frac{b-x}{a+x}}$

165. $\int\sqrt{\frac{a-x}{b+x}}\,dx = \sqrt{(a-x)(b+x)} + (a+b)\arcsin\sqrt{\frac{b+x}{a+x}}$

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

167. $\int\frac{dx}{\sqrt{(x-a)(b-x)}} = 2\arcsin\sqrt{\frac{x-a}{b-a}}$

168. $\int\frac{dx}{ax^3+b} = \frac{k}{3b}\left[\sqrt{3}\arctan\frac{2x-k}{k\sqrt{3}}\left|\frac{k}{\sqrt{x^2-kx+k^2}}\right|\right]\ ,\ \left(b\neq 0,\ k=\sqrt[3]{\frac{b}{a}}\right)$

169. $\int\frac{x\,dx}{ax^3+b} = \frac{k}{3ak}\left[\sqrt{3}\arctan\frac{2x-k}{k\sqrt{3}} - \log\left|\frac{k}{\sqrt{x^2-kx+k^2}}\right|\right]\ ,\ \left(b\neq 0,\ k=\sqrt[3]{\frac{b}{a}}\right)$

170. $\int\frac{dx}{x(ax^m+b)} = \frac{1}{bm}\log\left|\frac{x^m}{ax^m+b}\right|\ ,\ (b\neq 0)$

171. $\int\frac{dx}{\sqrt{(2ax-x^2)^3}} = \frac{x-a}{a^2\sqrt{2ax-x^2}}$

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172. $\int x\frac{dx}{(2ax-x^2)^3} = \frac{x}{a\sqrt{(2ax-x^2)}}$

173. $\int \frac{dx}{\sqrt{2ax-x^2}} = \log\left|x+a+\sqrt{2ax-x^2}\right|$

174. $\int \sqrt{\frac{cx+d}{ax+b}}\,dx = \frac{\sqrt{ax+b}\cdot\sqrt{cx+d}}{a} + \frac{(ad-bc)}{2a}\int \frac{dx}{\sqrt{ax+b}\cdot\sqrt{cx+d}}$

175. $\int(\sin ax)\,dx = -\frac{1}{a}\cos ax$

176. $\int(\sin^2 ax)\,dx = -\frac{1}{2a}\cos ax \sin ax + \frac{1}{2}x = \frac{1}{2}x - \frac{1}{4a}sin2ax$

177. $\int(\sin^3 ax)dx = -\frac{1}{3a}(\cos ax)(\sin^2 ax + 2)$

178. $\int(\sin^4 ax)dx = \frac{3x}{8} - \frac{\sin 2ax}{4a} + \frac{\sin 4ax}{32a}$

179. $\int(\sin^n ax)dx = \frac{\sin^{n-1} ax \cos ax}{na} + \frac{n-1}{n}\int(\sin^{-2} ax)dx$

180. $\int \frac{dx}{\sin^2 ax} = \int(\csc^2 ax)dx = -\frac{1}{2}\cot ax$

181. $\int \frac{dx}{\sin^m ax} = \int(\csc^m ax)dx = -\frac{1}{(m-1)a}\cdot\frac{\cos ax}{\sin^{m-1} ax} + \frac{m-2}{m-1}\int \frac{dx}{\sin^{m-2} ax}$

182. $\int \sin(a+bx)\,dx = -\frac{1}{b}\cos(a+bx)$

183. $\int \frac{dx}{1\pm\sin ax} = \mp\frac{1}{a}tan\left(\frac{\pi}{4}\mp\frac{ax}{2}\right)$

184. $\int \frac{\sin ax}{1\pm\sin ax}dx = \pm\frac{1}{a}\tan\left(\frac{\pi}{4}\mp\frac{ax}{2}\right)$

185. $\int \frac{dx}{(\sin ax)(1\pm\sin ax)} = \frac{1}{a}\tan\left(\frac{\pi}{4}\mp\frac{ax}{2}\right) + \frac{1}{a}\log\tan\frac{ax}{2}$

186. $\int \frac{dx}{(1\pm\sin ax)^2} = -\frac{1}{2a}\tan\left(\frac{\pi}{4}-\frac{ax}{2}\right) - \frac{1}{6a}\tan^3\left(\frac{\pi}{4}-\frac{ax}{2}\right)$

187. $\int \frac{dx}{(1-\sin ax)^2} = -\frac{1}{2a}\cot\left(\frac{\pi}{4}-\frac{ax}{2}\right) - \frac{1}{6a}\cot^3\left(\frac{\pi}{4}-\frac{ax}{2}\right)$

188. $\int \frac{dx}{(1+\sin ax)^2} = -\frac{1}{2a}\tan\left(\frac{\pi}{4}-\frac{ax}{2}\right) - \frac{1}{6a}\tan^3\left(\frac{\pi}{4}-\frac{ax}{2}\right)$

189. $\int \frac{\sin x\,dx}{(1-\sin ax)^2} = -\frac{1}{2a}\cot\left(\frac{\pi}{4}-\frac{ax}{2}\right) + \frac{1}{6a}\cot^3\left(\frac{\pi}{4}-\frac{ax}{2}\right)$

190. $\int \frac{\sin x\,dx}{a+b\sin x} = \frac{x}{b} - \frac{a}{b}\int \frac{dx}{a+b\sin x}$

191. $\int \frac{dx}{(\sin x)(a+b\sin x)} = \frac{1}{a}\log\tan\frac{x}{2} - \frac{b}{a}\int \frac{dx}{a+b\sin x}$

192. $\int \frac{dx}{(a+b\sin x)^2} = \frac{b\cos x}{(a^2-b^2)(a+b\sin x)} + \frac{a}{a^2-b^2}\int \frac{dx}{a+b\sin x}$

193. $\int \frac{\sin x\,dx}{(a+b\sin x)^2} = \frac{a\cos x}{(b^2-a^2)(a+b\sin x)} + \frac{b}{b^2-a^2}\int \frac{dx}{a+b\sin x}$

194. $\int \sqrt{1+\sin x}\,dx = \pm 2\left(\sin\frac{x}{2} - \cos\frac{x}{2}\right)$

$\left[use + if(8k-1)\frac{\pi}{2} < x \le (8k+3)\frac{\pi}{2}, otherwise -; k\ an\ integer\right]$

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195. $\int \sqrt{1-\sin x}\,dx = \pm 2\left(\sin\frac{x}{2}+\cos\frac{x}{2}\right)$
$\left[use+if\,(8k-1)\frac{\pi}{2} < x \leq (8k+1)\frac{\pi}{2}, otherwise-; k\ an\ integer\right]$

196. $\int(\cos ax)\,dx = \frac{1}{a}\sin ax$

197. $\int(\cos^2 ax)\,dx = \frac{1}{2a}\sin axcos\ ax + \frac{1}{2}x = \frac{1}{2}x + \frac{1}{4a}\sin 2x$

198. $\int(\cos^3 ax)\,dx = \frac{1}{3a}(\sin ax)(\cos^2 ax + 2)$

199. $\int(\cos^3 ax)\,dx = \frac{3x}{8} + \frac{\sin 2ax}{4a} + \frac{\sin 4ax}{32a}$

200. $\int(\cos^{\mathrm{n}} ax)\,dx = \frac{1}{na}\cos^{n-1} ax \sin ax + \frac{n-1}{n}\int(\cos^{n-2} ax)\,dx$

201. $\int(\cos^{2m} ax)\,dx = \frac{\sin ax}{a}\sum_{r=0}^{m-1}\frac{2(m!)^2(2r)!}{(2r+1)!(m!)^2}\cos^{2r+1} ax + \frac{(2m)!}{2^{2m}(m!)^2}$

202. $\int(\cos^{2m+1} ax)\,dx = \frac{\sin ax}{a}\sum_{r=0}^{m}\frac{2^{2m-2r}(m!)^2(2r)!}{(2m+1)!(r!)^2}\cos^{2r} ax$

203. $\int\frac{dx}{\cos^2 ax} = \int(\sec^2 ax)dx = \frac{1}{a}\tan ax$

204. $\int\frac{dx}{\cos^n ax} = \int(\sec^n ax)dx = \frac{1}{(n-1)a}\cdot\frac{\sin ax}{\cos^{n-1} ax} + \frac{n-2}{n-1}\int\frac{dx}{\cos^{n-2} ax}$

205. $\int\cos(a+bx)\ dx = \frac{1}{b}\sin(a+bx)$

206. $\int\frac{dx}{1+\cos ax} = \frac{1}{a}\tan\frac{ax}{2}$

207. $\int\frac{dx}{1+\cos ax} = -\frac{1}{a}\cot\frac{ax}{2}$

208. $\int\frac{dx}{a+b\cos x} = \frac{2}{\sqrt{a^2-b^2}}\tan^{-1}\frac{\sqrt{a^2-b^2}\tan\frac{x}{2}}{a+b}$ or
$\frac{1}{\sqrt{a^2-b^2}}\log\left(\frac{\sqrt{a^2-b^2}\tan\frac{x}{2}+a+b}{\sqrt{a^2-b^2}\tan\frac{x}{2}-a-b}\right)$

209. $\int\frac{\cos ax}{1+\cos ax}dx = x - \frac{1}{2}\tan\frac{ax}{2}$

210. $\int\frac{\cos ax}{1\cos ax}dx = -x - \frac{1}{2}\tan\frac{ax}{2}$

211. $\int\frac{dx}{(\cos ax)(1+\cos ax)} = \frac{1}{a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right) - \frac{1}{a}\tan\frac{ax}{2}$

212. $\int\frac{dx}{(\cos ax)(1+\cos ax)} = \frac{1}{a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right) - \frac{1}{a}\tan\frac{ax}{2}$

213. $\int\frac{dx}{(1+\cos ax)^2} = \frac{1}{2a}\tan\frac{ax}{2} + \frac{1}{6a}\tan^3\frac{ax}{2}$

214. $\int\frac{dx}{(1-\cos ax)^2} = -\frac{1}{2a}\cot\frac{ax}{2} - \frac{1}{6a}\cot^3\frac{ax}{2}$

215. $\int\frac{\cos ax}{(1+\cos ax)^2}dx = \frac{1}{2a}\tan\frac{ax}{2} - \frac{1}{6a}\tan^3\frac{ax}{2}$

216. $\int\frac{\cos ax}{(1-\cos ax)^2}ax = \frac{1}{2a}\cot\frac{ax}{2} - \frac{1}{6a}\cot^3\frac{ax}{2}$

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217. $\int \frac{\cos x\,dx}{a+b\cos x} = \frac{x}{b} - \frac{a}{b}\int \frac{dx}{a+b\cos x}$

218. $\int \frac{dx}{(\cos x)(a+b\cos x)} = \frac{1}{a}\log\tan\left(\frac{x}{2}+\frac{\pi}{4}\right) - \frac{b}{a}\int \frac{dx}{a+b\cos x}$

219. $\int \frac{dx}{(a+b\cos x)^2} = \frac{b\sin x}{(b^2-a^2)(a+b\cos x)} - \frac{a}{b^2-a^2}\int \frac{dx}{a+b\cos x}$

220. $\int \frac{\cos x}{(a+b\cos x)^2}\,dx = \frac{a\sin x}{(a^2-b^2)(a+b\cos x)} - \frac{a}{a^2-b^2}\int \frac{dx}{a+b\cos x}$

221. $\int \sqrt{1-\cos ax}\,dx = -\frac{2\sin ax}{a\sqrt{1-\cos ax}} = -\frac{2\sqrt{2}}{a}\cos\left(\frac{ax}{2}\right)$

222. $\int \sqrt{1+\cos ax}\,dx = \frac{2\sin ax}{a\sqrt{1+\cos ax}} = \frac{2\sqrt{2}}{a}\sin\left(\frac{ax}{2}\right)$

223. $\int \frac{dx}{\sqrt{1-\cos ax}} = \pm\sqrt{2}\log\tan\left(\frac{x}{4}\right)$
$[use + if\ 4k\pi < x < (4k+2)\pi, otherwise-; k\ an\ integer]$

224. $\int \frac{dx}{\sqrt{1+\cos ax}} = \pm\sqrt{2}\log\tan\left(\frac{x+\pi}{4}\right)$
$[use + if\ (4k-1)\pi < x < (4k+1)\pi, otherwise-; k\ an\ integer]$

225. $\int (\sin mx)(\sin nx)\,dx = \frac{\sin(m-n)x}{2(m-n)} - \frac{\sin(m+n)x}{2(m+n)}\ ,\ (m^2 \neq n^2)$

226. $\int (\cos mx)(\cos nx)\,dx = \frac{\sin(m-n)x}{2(m-n)} + \frac{\sin(m+n)x}{2(m+n)}\ ,\ (m^2 \neq n^2)$

227. $\int (\sin ax)(\cos ax)\,dx = \frac{1}{2a}\sin^2 ax$

228. $\int (\sin mx)(\cos nx)\,dx = \frac{\cos(m-n)x}{2(m-n)} - \frac{\cos(m+n)x}{2(m+n)}\ ,\ (m^2 \neq n^2)$

229. $\int (\sin^2 ax)(\cos^2 ax)\,dx = -\frac{1}{32}\sin 4ax + \frac{x}{8}$

230. $\int (\sin ax)(\cos^m ax)dx = -\frac{\cos^{m+1} ax}{(m+1)a}$

231. $\int (\sin^m ax)(cos\ ax)dx = \frac{\sin^{m+1} ax}{(m+1)a}$

232. $\int \frac{\sin ax}{\cos^2 ax}\,dx = \frac{1}{a\cos ax} = \frac{\sec ax}{a}$

233. $\int \frac{\sin^2 ax}{cos\ ax}\,dx = -\frac{1}{a}\sin ax + \frac{1}{a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$

234. $\int \frac{\cos ax}{\sin^2 ax}\,dx = -\frac{1}{a\sin ax} = \frac{\csc ax}{a}$

235. $\int \frac{dx}{(\sin ax)(\cos ax)} = \frac{1}{a}\log\tan ax$

236. $\int \frac{dx}{(\sin ax)(\cos^2 ax)} = \frac{1}{a}\left(\sec ax + \log\tan\frac{ax}{2}\right)$

237. $\int \frac{dx}{(\sin ax)(\cos^n ax)} = \frac{1}{a(n-1)\cos^{n-1} ax} + \int \frac{dx}{(\sin ax)(\cos^{n-2} ax}$

238. $\int \frac{dx}{(\sin^2 ax)(\cos ax)} = -\frac{1}{a}\csc ax + \frac{1}{a}\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$

239. $\int \frac{dx}{(\sin^2 ax)(\cos^2 ax)} = -\frac{2}{a}\cot 2ax$

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240. $\int \frac{\sin ax}{1\pm\cos ax}\,dx = \mp\frac{1}{a}\log(1 \pm \cos ax)$
241. $\int \frac{\cos ax}{1\pm\sin ax}\,dx = \pm\frac{1}{a}\log(1 \pm \sin ax)$
242. $\int \frac{dx}{(\sin ax)(1\pm\cos ax)} = \pm\frac{1}{2a(1\pm\cos ax)} + \frac{1}{2a}\log\tan\frac{ax}{2}$
243. $\int \frac{dx}{(\cos ax)(1\pm\sin ax)} = \mp\frac{1}{2a(1\pm\cos ax)} + \frac{1}{2a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$
244. $\int \frac{\sin ax}{(\cos ax)(1\pm\cos ax)}\,dx = \frac{1}{a}\log(\sec ax \pm 1)$
245. $\int \frac{\cos ax}{(\sin ax)(1\pm\sin ax)}\,dx = -\frac{1}{a}\log(\csc ax \pm 1)$
246. $\int \frac{\sin ax}{(\cos ax)(1\pm\sin ax)}\,dx = \frac{1}{2a(1\pm\sin ax)} \pm \frac{1}{2a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$
247. $\int \frac{\cos ax}{(\sin ax)(1\pm\cos ax)}\,dx = -\frac{1}{2a(1\pm\cos ax)} \pm \frac{1}{2a}\log\tan\left(\frac{ax}{2}\right)$
248. $\int \frac{dx}{\sin ax\pm\cos ax} = \frac{1}{a\sqrt{2}}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$
249. $\int \frac{dx}{(\sin ax\pm\cos ax)^2} = \frac{1}{2a}\tan\left(ax \mp \frac{\pi}{4}\right)$
250. $\int \frac{dx}{1+\cos ax\pm\sin ax} = \pm\frac{1}{a}\log\left(1 \pm \tan\frac{ax}{2}\right)$
251. $\int \frac{dx}{a^2\cos^2 cx - b^2\sin^2 cx} = \frac{1}{2abc}\log\frac{b\tan cx+a}{b\tan cx-a}$
252. $\int \frac{\cos ax}{\sqrt{1+b^2\sin^2 ax}}\,dx = \frac{1}{ab}\log\left(b\sin ax + \sqrt{1+b^2\sin^2 ax}\right)$
253. $\int \frac{\cos ax}{\sqrt{1-b^2\sin^2 ax}}\,dx = \frac{1}{ab}\sin^{-1}(b\sin ax)$
254. $\int (\cos ax)\sqrt{1+b^2\sin^2 ax}\,dx = \frac{\sin ax}{2a}\sqrt{1+b^2\sin^2 ax} + \frac{1}{2ab}\log\left(b\sin ax + \sqrt{1+b^2\sin^2 ax}\right)$
255. $\int (\cos ax)\sqrt{1-b^2\sin^2 ax}\,dx = \frac{\sin ax}{2a}\sqrt{1-b^2\sin^2 ax} + \frac{1}{2ab}\sin^1(b\sin ax)$
256. $\int (\tan ax)dx = -\frac{1}{a}\log\cos ax = \frac{1}{a}\log\sec ax$
257. $\int (\cot ax)dx = \frac{1}{a}\log\sin ax = -\frac{1}{a}\log\csc ax$
258. $\int (\sec ax)dx = \frac{1}{a}\log(\sec ax + \tan ax) = \frac{1}{a}\log\tan\left(\frac{\pi}{4}+\frac{ax}{2}\right)$
259. $\int (\csc ax)dx = \frac{1}{a}\log(\csc ax + \cot ax) = \frac{1}{a}\log\tan\frac{ax}{2}$
260. $\int (\tan^2 ax)dx = \frac{1}{a}\tan ax - x$
261. $\int (\tan^3 ax)dx = \frac{1}{2a}\tan^2 ax + \frac{1}{a}\log\cos ax$
262. $\int (\tan^4 ax)dx = \frac{\tan^3 ax}{3a} - \frac{1}{a}\tan x + x$
263. $\int (\tan^n ax)dx = \frac{\tan^{n-1} ax}{a(n-1)} - \int (\tan^{n-2} ax)dx$

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264. $\int(\cot^2 ax)dx = \frac{1}{a}\tan ax - x$
265. $\int(\cot^3 ax)dx = \frac{1}{2a}\cot^2 ax + \frac{1}{a}\log\cos ax$
266. $\int(\tan^4 ax)dx = -\frac{1}{3a}\cot^3 ax + \frac{1}{a}\cot ax + x$
267. $\int(\cot^n ax)dx = \frac{\cot^{n-1} ax}{a(n-1)} - \int(\cot^{n-2} ax)dx$

268. $\int(\sin^{-1} ax)dx = xsin^{-1}ax + \frac{\sqrt{1-a^2x^2}}{a}$
269. $\int(\sin^{-1} ax)dx = xcos^{-1}ax - \frac{\sqrt{1-a^2x^2}}{a}$
270. $\int(\tan^{-1} ax)dx = xtan^{-1}ax - \frac{1}{2a}\log(1+a^2x^2)$
271. $\int(\cot^{-1} ax)dx = xcot^{-1}ax + \frac{1}{2a}\log(1+a^2x^2)$
272. $\int(\sec^{-1} ax)dx = x\sec^{-1} ax - \frac{1}{a}log\left(ax + \sqrt{a^2x^2-1}\right)$
273. $\int(\csc^{-1} ax)dx = x\csc^{-1} ax + \frac{1}{a}log\left(ax + \sqrt{a^2x^2-1}\right)$
274. $\int x[\sin^{-1}(ax)]dx = 1/4a^2\left[(2a^2x^2-1)\sin^{-1}(ax) + ax\sqrt{1-a^2x^2}\right]$
275. $\int x[\cos^{-1}(ax)]dx = 1/4a^2\left[(2a^2x^2-1)\cos^{-1}(ax) - ax\sqrt{1-a^2x^2}\right]$
276. $\int x(\sin ax)dx = \frac{1}{a^2}\sin ax - \frac{x}{a}\cos ax$
277. $\int x^2(\sin ax)dx = \frac{2x}{a^2}\sin ax - \frac{a^2x^2-2}{a^3}\cos ax$
278. $\int x^3(\sin ax)dx = \frac{3a^2x^2-6}{a^4}\sin ax - \frac{a^2x^3-6x}{a^3}\cos ax$
279. $\int x(\cos a)dx = \frac{1}{a^2}\cos ax + \frac{x}{a}\cos ax$
280. $\int x^2(\cos ax)dx = \frac{2x\cos ax}{a^2} + \frac{a^2x^2-2}{a^3}\sin ax$
281. $\int x^3(\cos ax)dx = \frac{3a^2x^2-6}{a^4}\cos ax - \frac{a^2x^3-6x}{a^3}\sin ax$
282. $\int x(\sin^2 ax)dx = \frac{x^4}{4} - \frac{x\sin 2ax}{4a} - \frac{\cos 2ax}{8a^2}$
283. $\int x^2(\sin^2 ax)dx = \frac{x^3}{6} - \left(\frac{x^2}{4a} - \frac{1}{8a^3}\right)\sin 2ax - \frac{x\cos 2ax}{4a^2}$
284. $\int x(\sin^3 ax)dx = \frac{x\cos 3ax}{12a} - \frac{\sin 3ax}{36a^2} - \frac{3x\cos ax}{4a} + \frac{3\sin ax}{4a^2}$
285. $\int x(\cos^2 a)dx = \frac{x^2}{4} + \frac{x\sin 2ax}{4a} + \frac{\cos 2ax}{8a^2}$
286. $\int x^2(\cos^2 a)dx = \frac{x^{3^2}}{6} + \left(\frac{x^2}{4a} - \frac{1}{8a^3}\right)\frac{\cos 2ax}{84}$
287. $\int x(\cos^3 a)dx = \frac{x\sin 3x}{12a} + \frac{\cos 3x}{36a^2} + \frac{3x\sin ax}{4a} + \frac{3\cos ax}{4a^2}$

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288. $\int \frac{\sin ax}{x^m} dx = -\frac{\sin ax}{(m-1)x^{m-1}} + \frac{a}{m-1}\int \frac{\cos ax}{x^{m-1}} dx$

289. $\int \frac{\cos ax}{x^m} dx = -\frac{\cos ax}{(m-1)x^{m-1}} - \frac{a}{m-1}\int \frac{\cos ax}{x^{m-1}} dx$

290. $\int \frac{x}{1\pm\sin ax} dx = \mp \frac{x\cos ax}{a(1\pm\sin ax)} + \frac{1}{a^2}\log(1 \pm \sin ax)$

291. $\int \frac{x}{1+\cos ax} dx = \frac{x}{a}\tan\frac{ax}{2} + \frac{2}{a^2}\log\cos\frac{ax}{2}$

292. $\int \frac{x}{1-\cos ax} dx = -\frac{x}{a}\cot\frac{ax}{2} + \frac{2}{a^2}\log\sin\frac{ax}{2}$

293. $\int \frac{x+\sin x}{1+\cos ax} dx = x\tan\frac{x}{2}$

294. $\int \frac{x-\sin x}{1-\cos ax} dx = -x\cot\frac{x}{2}$

295. $\int \frac{x}{\sin^2 ax} dx = \int x(\csc^2 ax)dx = -\frac{x\cot ax}{a} + \frac{1}{a^2}\log\sin ax$

296. $\int \frac{x}{\sin^n ax} dx = \int x(\csc^n ax)dx - \frac{x\cos ax}{a(n-1)\sin^{n-1} ax}$

$$-\frac{1}{a^2(n-1)(n-2)\sin^{n-2} ax} + \frac{(n-2)}{(n-1)}\int \frac{x}{\sin^{n-2} ax} dx$$

297. $\int \frac{x}{\cos^2 ax} dx = \int x(\sec^2 ax)dx = \frac{1}{a}xtan\, ax + \frac{1}{a^2}\log\cos ax$

298. $\int \frac{x}{\cos^n ax} dx = \int x(\sec^n ax)dx - \frac{x\sin ax}{a(n-1)\cos^{n-1} ax}$

$$-\frac{1}{a^2(n-1)(n-2)\cos^{n-2} ax} + \frac{(n-2)}{(n-1)}\int \frac{x}{\cos^{n-2} ax} dx$$

299. $\int (\log x)dx = x\log x - x$

300. $\int x(\log x)dx = \frac{x^2}{2}\log x - \frac{x^2}{4}$

301. $\int x^2(\log x)dx == \frac{x^3}{3}\log x - \frac{x^3}{9}$

302. $\int x^n(\log ax)dx = \frac{x^{n+1}}{n+1}\log ax - \frac{x^{n+1}}{(n-1)}$

303. $\int (\log x)^2 dx = x(\log x)^2 - 2x\log x + 2x$

304. $\int \frac{(\log x)^n}{x} dx = \frac{1}{n+1}(\log x)^{n+1}$

305. $\int \frac{dx}{\log x} = \log(\log x) + \log x + \frac{(\log x)^2}{2\cdot 2!} + \frac{(\log x)^3}{3\cdot 3!}$

306. $\int \frac{dx}{x\log x} = \log(\log x)$

307. $\int \frac{dx}{x(\log x)^n} = -\frac{1}{(n-1)(\log x)^{n-1}}$

308. $\int [\log(ax+b)]dx = \frac{ax+b}{a}\log(ax+b) - x$

309. $\int \frac{\log(ax+b)}{x^2} dx = \frac{a}{b}\log x - \frac{ax+b}{bx}\log(ax+b)$

310. $\int \left[\log\frac{x+a}{x-a}\right] dx = (x-a)\log(x+a) - (x-a)\log(x-a)$

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311. $\int x^n(\log X)dx = \frac{n^{n-1}}{n+1} logX - \frac{2c}{n-1}\int \frac{x^{n+2}}{X}dx - \frac{b}{n-1}\int \frac{x^{n-1}}{X}dx$
$where\ X = a + bx + cx^2$
312. $\int[\log(x^2 + a^2)]dx = x\log(x^2 + a^2) - 2ax + 2a\tan^{-1}\frac{x}{a}$
313. $\int[\log(x^2 - a^2)]dx = x\log(x^2 - a^2) - 2x + a\log\frac{x+a}{x-a}$
314. $\int[\log(x^2 - a^2)]dx = \frac{1}{2}(x^2 \pm a^2)\log(x^2 \pm a^2) - \frac{1}{2}x^2$
315. $\int\left[log\left(x + \sqrt{x^2 \pm a^2}\right)\right]dx = x\log\left(x + \sqrt{x^2 \pm a^2}\right) - \sqrt{x^2 \pm a^2}$
316. $\int x\left[log\left(x + \sqrt{x^2 \pm a^2}\right)\right]dx = \left(\frac{x^2}{2} \pm \frac{a^2}{4}\right)\log\left(x + \sqrt{x^2 \pm a^2}\right) - \frac{x\sqrt{x^2 \pm a^2}}{4}$
317. $\int x^m\left[log\left(x + \sqrt{x^2 \pm a^2}\right)\right]dx = \frac{x^{m+1}}{m+1}\log\left(x + \sqrt{x^2 \pm a^2}\right) - \frac{1}{m+1}\int \frac{x^{m+1}}{\sqrt{x^2 \pm a^2}}dx$
318. $\int \frac{\log(x+\sqrt{x^2+a^2})}{x^2}dx = -\frac{\log(x+\sqrt{x^2+a^2})}{x} - \frac{1}{a}\log\frac{a+\sqrt{x^2+a^2}}{x}$
319. $\int \frac{\log(x+\sqrt{x^2+a^2})}{x^2}dx = -\frac{\log(x+\sqrt{x^2+a^2})}{x} + \frac{1}{|a|}\sec^{-1}\frac{x}{a}$
320. $\int e^x dx = e^x$
321. $\int e^{-x}dx = e^{-x}$
322. $\int e^{ax}dx = \frac{e^{ax}}{a}$
323. $\int xe^{ax}dx = \frac{e^{ax}}{a^2}(ax - 1)$
324. $\int \frac{e^{ax}}{x^m}dx = -\frac{1}{m-1}\frac{e^{ax}}{x^{m-1}} + \frac{a}{m-1}\int \frac{e^{ax}}{x^{m-1}}dx$
325. $\int e^{ax}\log x\,dx = \frac{e^{ax}\log x}{a} - \frac{1}{a}\int \frac{e^{ax}}{x}dx$
326. $\int \frac{dx}{1+e^x} = x - \log(1 + e^x) = \log\frac{e^x}{1+e^x}$
327. $\int \frac{dx}{a+be^{px}} = \frac{x}{a} - \frac{1}{ap}\log(a + be^{px})$
328. $\int \frac{dx}{ae^{mx}+be^{-mx}} = \frac{1}{m\sqrt{ab}}\tan^{-1}\left(e^{mx}\sqrt{\frac{a}{b}}\right)$
329. $\int(a^x - a^{-x})dx = \frac{a^x+a^{-x}}{\log a}$
330. $\int \frac{e^{ax}}{b+ce^{ax}}dx = \frac{1}{ac}\log(b + ce^{ax})$
331. $\int \frac{xe^{ax}}{(1+ax)^2}dx = \frac{e^{ax}}{a^2(1+ax)}$
332. $\int xe^{-x^2}dx = -\frac{1}{2}e^{-x^2}$
333. $\int e^{ax}[\sin(bx)]dx = \frac{e^{ax}[\mathrm{a}\sin(bx) - b\cos(bx)]}{a^2+b^2}$

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334. $\int e^{ax}[\sin(bx)][\sin(cx)]dx = \frac{e^{ax}[(b-c)\sin(b-c)x+a\cos(b-c)x]}{2[a^2+(b+c)^2]} - \frac{e^{ax}[(b+c)\sin(b+c)x+a\cos(b+c)x]}{2[a^2+(b+c)^2]}$

335. $\int e^{ax}[\cos(bx)]dx = \frac{e^{ax}}{a^2+b^2} + [a\cos(bx) + b\sin(bx)]$

336. $\int e^{ax}[\cos(bx)][\cos(bx)]dx = \frac{e^{ax}[(b-c)\sin(b-c)x+a\cos(b-c)x]}{2[a^2+(b-c)^2]} + \frac{e^{ax}[(b+c)\sin(b+c)x+a\cos(b+c)x]}{2[a^2+(b+c)^2]}$

337. $\int e^{ax}[\sin^n bx]dx = \frac{1}{a^2+n^2b^2}[(a\sin bx - nb\cos bx\sin^{n-1} bx + n(n-1)b^2\int e^{ax}(\sin^{n-2} bx)dx]$

338. $\int e^{ax}[\cos^n bx]dx = \frac{1}{a^2+n^2b^2}[(a\cos bx + nb\sin bx\sin^{n-1} bx + n(n-1)b^2\int e^{ax}(\sin^{n-2} bx)dx]$

339. $\int xe^{ax}(\sin bx)]dx = \frac{xe^{ax}}{a^2+b^2}(a\sin bx - b\cos bx) - \frac{e^{ax}}{(a^2+b^2)^2}[(a^2-b^2)\sin bx - 2ab\cos bx]$

340. $\int xe^{ax}(\cos bx)]dx = \frac{xe^{ax}}{a^2+b^2}(a\cos bx + b\sin bx) - \frac{e^{ax}}{(a^2+b^2)^2}[(a^2-b^2)\cos bx + 2ab\sin bx]$

341. $\int(\sinh x)dx = \cosh x$

342. $\int(\cosh x)dx = \sinh x$

343. $\int(\tanh x)dx = \log\cosh x$

344. $\int(\coth x)dx = \log\sinh x$

345. $\int(\operatorname{sech} x)dx = \tan^{-1}(\sinh x)$

346. $\int(\operatorname{csch} x)dx = \log\tanh\left(\frac{x}{2}\right)$

347. $\int(\sinh x)dx = \mathrm{x}\cosh x - \sinh x$

348. $\int x^n(\sinh x)dx = x^n\cosh x - n\int x^{n-1}(\cosh x)dx$

349. $\int x(\cosh x)dx = x\sinh x - \cosh x$

350. $\int x^n(\cosh x)dx = x^n\sinh x - n\int x^{n-1}(\sinh x)dx$

351. $\int(\operatorname{sech} x)(\tanh x)dx = -\operatorname{sech} x$

352. $\int(\operatorname{csch} x)(\coth x)dx = -\operatorname{csch} x$

353. $\int(\sinh^2 x)dx = \frac{\sinh 2x}{4} - \frac{x}{2}$

354. $\int(\tanh^2 x)dx = x - \tanh x$

355. $\int(\tanh^n x)dx = -\frac{\tanh^{n-1}}{n-1} + \int(\tanh^{n-2} x)dx\ ,\ (n \neq 1)$

356. $\int(\operatorname{sech}^2 x)dx = \tanh x$

357. $\int(\cosh^2 x)dx = \frac{\sinh 2x}{4} + \frac{x}{2}$

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358. $\int(\coth^2 x)dx = x - \coth x$

359. $\int(\coth^n x)dx = -\frac{\coth^{n-1} x}{n-1} + \int \coth^{n-2} x\, dx \ , \ (n \neq 1)$

360. $\int_1^\infty \frac{dx}{x^m} = \frac{1}{m-1} \ , \ [m > 1]$

361. $\int_1^\infty \frac{dx}{(1+x)x^p} = \pi \csc p\pi \ , \ [p < 1]$

362. $\int_1^\infty \frac{dx}{(1-x)x^p} = -\pi \cot p\pi \ , \ [p < 1]$

363. $\int_1^\infty \frac{x^{p-1}dx}{1+x} = \frac{\pi}{\sin p\pi} = \mathrm{B}(p, 1-p) = \Gamma(p)\Gamma(1-p) \ , \ [0 < p < 1]$

364. $\int_0^\infty \frac{x^{m-1}dx}{1+x^n} = \frac{\pi}{n \sin\frac{m\pi}{n}} \ , \ [0 < m < n]$

365. $\int_0^\infty \frac{dx}{(1+x)\sqrt{x}} = \pi$

366. $\int_0^\infty \frac{a\, dx}{a^2+x^2} = \frac{\pi}{2} \ , \ if\ a > 0; 0, if\ a = 0; -\frac{\pi}{2}, if\ a < 0$

367. $\int_0^\infty e^{-ax}\, dx = \frac{1}{a}, \ (a > 0)$

368. $\int_0^\infty \frac{e^{-ax} - e^{-bx}}{x}\, dx = log\frac{b}{a}, \ (a, b > 0)$

369. $\int_0^\infty x^n e^{-ax}\, dx = \frac{\Gamma(n+1)}{a^{n+1}}, \ (n > -1, a > 0)$ or

$= \frac{n!}{a^{n+1}} \ , \quad (a > 0, an\ positive\ integer)$

370. $\int_0^\infty x^n \exp(-ax^p)\, dx = \frac{\Gamma(k)}{pa^k} \ , \ \left(n > -1, p > 0, a > 0, k = \frac{n+1}{p}\right)$

371. $\int_0^\infty e^{-a^2x^2} dx = \frac{1}{2a}\sqrt{\pi} = \frac{1}{2a}\Gamma\left(\frac{1}{2}\right) \ , \ (a > 0)$

372. $\int_0^\infty xe^{-x^2} dx = \frac{1}{2}$

373. $\int_0^\infty x^2 e^{-x^2} dx = \frac{\sqrt{\pi}}{4}$

374. $\int_0^\infty x^{2n} e^{-ax^2} dx = \frac{1 \cdot 3 \cdot 5}{2^{n+1}a^n}\sqrt{\frac{\pi}{2}}$

375. $\int_0^\infty x^{2n+1} e^{-ax^2} dx = \frac{n!}{2a^{n+1}} \ , \ (a > 0)$

376. $\int_0^1 x^m e^{-ax} dx = \frac{m!}{a^{m+1}}\left[1 - e^{-a}\sum_{r=0}^{m} \frac{a^r}{r!}\right]$

377. $\int_0^\infty e^{\left(-x^2 - \frac{a^2}{x^2}\right)} dx = \frac{e^{-2a}\sqrt{\pi}}{2} \ , \ (a \geq 0)$

378. $\int_0^\infty e^{-nx}\sqrt{x}\, dx = \frac{1}{2n}\sqrt{\frac{\pi}{n}}$

379. $\int_0^\infty \frac{e^{-nx}}{\sqrt{x}} dx = \sqrt{\frac{\pi}{n}}$

380. $\int_0^\infty e^{-ax}(\cos mx)\, dx = \frac{a}{a^2+m^2} \ , \ (a > 0)$

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381. $\int_0^\infty e^{-ax}(\sin mx)\,dx = \frac{m}{a^2+m^2}$, $(a>0)$
382. $\int_0^\infty xe^{-ax}[\sin(bx)]\,dx = \frac{a^2-b^2}{(a^2+b^2)^2}$, $(a>0)$
383. $\int_0^\infty xe^{-ax}[\cos(bx)]\,dx = \frac{a^2-b^2}{(a^2+b^2)^2}$, $(a>0)$
384. $\int_0^\infty x^n e^{-ax}[\sin(bx)]\,dx = \frac{n![(a+ib)^{n+1}-(a-ib)^{n+1}}{2i(a^2+b^2)^{n+1}}$, $(i^2=-1, a>0)$
385. $\int_0^\infty x^n e^{-ax}[\cos(bx)]\,dx = \frac{n![(a-ib)^{n+1}+(a+ib)^{n+1}}{2i(a^2+b^2)^{n+1}}$, $(i^2=-1, a>0)$
386. $\int_0^\infty \frac{e^{-ax}\sin x}{x}dx = \cot^{-1} a$, $(a>0)$
387. $\int_0^\infty e^{-a^2x^2}\cos bx\,dx = \frac{\sqrt{\pi}}{2a}\exp\left(-\frac{b^2}{4a^2}\right)$, $(ab\neq 0)$
388. $\int_0^\infty e^{-t\cos\phi}\,t^{b-1}\sin(t\sin\phi)]\mathrm{dt} = [\Gamma(b)]\sin(b\phi)$, $\left(b>0, -\frac{\pi}{2}<\phi, <\frac{\pi}{2}\right)$
389. $\int_0^\infty e^{-t\cos\phi}\,t^{b-1}\sin(t\cos\phi)]\mathrm{dt} = [\Gamma(b)]\cos(b\phi)$, $\left(b>0, -\frac{\pi}{2}<\phi, <\frac{\pi}{2}\right)$
390. $\int_0^\infty t^{b-1}(\sin t)dt = [\Gamma(b)]\cos\left(\frac{b\pi}{2}\right)$, $(0<b<1)$
391. $\int_0^\infty t^{b-1}(\cos t)dt = [\Gamma(b)]\sin\left(\frac{b\pi}{2}\right)$, $(0<b<1)$
392. $\int_0^1 (\log x)^n dx = (-1)^n\cdot n!$
393. $\int_0^1 \left(\log\frac{1}{x}\right)^{\frac{1}{2}}dx = \frac{\sqrt{\pi}}{2}$
394. $\int_0^1 \left(\log\frac{1}{x}\right)^{-\frac{1}{2}}dx = \sqrt{\pi}$
395. $\int_0^1 \left(\log\frac{1}{x}\right)^{n}dx = n!$
396. $\int_0^1 x\log(1-x)dx = -\frac{3}{4}$
397. $\int_0^1 x\log(1+x)dx = \frac{1}{4}$
398. $\int_0^1 x^m(\log x)^n\,dx = \frac{(-1)^n n!}{(m+1)^{n+1}}$, $m>-1, n=0,1,2,..$
If $n\neq 0,1,2,\ldots,$ *replace* $n!$ *by* $\Gamma(n+1)$.
399. $\int_0^\infty \frac{\sin x}{x^p}dx = \frac{\pi}{2\Gamma(p)\cos(p\pi/2)}$, $0<p<1$
400. $\int_0^\infty \frac{\cos x}{x^p}dx = \frac{\pi}{2\Gamma(p)\sin(p\pi/2)}$, $0<p<1$
401. $\int_0^\infty \frac{1-\cos px}{x}dx = \frac{\pi p}{2}$

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402. $\int_0^\infty \frac{\sin px \cos qx}{x} dx = \left\{0, q > p > 0; \frac{\pi}{2}, p > q > 0; \frac{\pi}{4}, p = q > 0\right\}$

403. $\int_0^\infty \frac{\cos(mx)}{x^2+a^2} dx = \frac{\pi}{2|a|} e^{|ma|}$

404. $\int_0^\infty \cos(x^2)\, dx = \int_0^\infty \sin(x^2)\, dx = \frac{1}{2}\sqrt{\frac{\pi}{2}}$

405. $\int_0^\infty \sin(x^2)\, dx = \frac{1}{n a^{\frac{1}{n}}} \Gamma\left(\frac{1}{n}\right) \sin\frac{\pi}{2n}$, $n > 1$

406. $\int_0^\infty \cos(x^2)\, dx = \frac{1}{n a^{\frac{1}{n}}} \Gamma\left(\frac{1}{n}\right) \cos\frac{\pi}{2n}$, $n > 1$

407. $\int_0^\infty \frac{\sin x}{\sqrt{x}} dx = \int_0^\infty \frac{\cos x}{\sqrt{x}} dx = \sqrt{\frac{\pi}{2}}$

408. (a) $\int_0^\infty \frac{\sin^3 x}{x} dx = \frac{\pi}{4}$

(b) $\int_0^\infty \frac{\sin^3 x}{x} dx = \frac{3}{4}\log 3$

409. $\int_0^\infty \frac{\sin^3 x}{x^3} dx = \frac{3\pi}{8}$

410. $\int_0^\infty \frac{\sin^4 x}{x^4} dx = \frac{\pi}{8}$

411. $\int_0^{\pi/2} \frac{dx}{1+a\cos x} = \frac{\cos^{-1} a}{\sqrt{a^2-b^2}}$, $(a < 1)$

412. $\int_0^{\pi} \frac{dx}{1+b\cos x} = \frac{\pi}{\sqrt{a^2-b^2}}$, $(a < b \geq 0)$

413. $\int_0^{2\pi} \frac{dx}{1+a\cos x} = \frac{2\pi}{\sqrt{1-a^2}}$, $(a < 1)$

414. $\int_0^\infty \frac{\cos ax - \cos bx}{x} dx = \log\frac{a}{b}$

415. $\int_0^{\pi/2} \frac{dx}{a^2\sin^2 x + b^2\cos^2 x} = \frac{\pi}{2ab}$

416. $\int_0^{\pi/2} (\sin^n x) dx = \int_0^{\pi/2} (\cos^n x) dx$ *or*

$= \frac{1 \cdot 3 \cdot 5 \cdot 7 \ldots (n-1)}{2 \cdot 4 \cdot 6 \cdot 8 \ldots (n)} \frac{\pi}{2}$, $(n \text{ an even integer}, n \neq 0)$ *or*

$= \frac{\sqrt{2}}{2} \frac{\Gamma\left(\frac{n+1}{2}\right)}{\Gamma\left(\frac{n}{2}+1\right)}$, $(n > -1)$

417. $\int_0^\infty \frac{\sin mx\, dx}{X} = \frac{\pi}{2}$, $if\ m > 0\ ; 0\ , if\ m = 0; -\frac{\pi}{2}, if\ m < 0$

418. $\int_0^\infty \frac{\cos x\, dx}{x} = \infty$

419. $\int_0^\infty \frac{\tan x\, dx}{x} = \frac{\pi}{2}$

420. $\int_0^\pi \sin ax \cdot \sin bx\, dx = \int_0^\pi \cos ax \cdot \cos bx\, dx = 0$, $(a \neq b\ ; a, b\ integers)$

421. $\int_0^{\pi/a} [\sin(ax)][\cos(ax)] dx = \int_0^\pi [\sin(ax)][\cos(ax)] dx = 0$

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422. $\int_0^{\pi}[\sin(ax)][\cos(bx)]dx = \frac{2a}{a^2-b^2}$, $if\, a-b\, is\, odd, or\, 0\, if\, a-b\, is\, even$

423. $\int_0^{\infty} \frac{\sin x \cos mx\, dx}{x} = 0$, $if\ m<-1\ or\ m>1; \frac{\pi}{4}$, $if\ m = \pm 1; \frac{\pi}{2}$, $if\ m^2<1$

424. $\int_0^{\infty} \frac{\sin ax \sin bx}{x^2} dx = \frac{\pi a}{a}$, $(a \le b)$

425. $\int_0^{\pi} \sin^2 mx\, dx = \int_0^{\pi} \cos^2 mx\, dx = \frac{\pi}{2}$

426. $\int_0^{\infty} \frac{\sin^2(px)}{x^2} dx = \frac{\pi p}{2}$

427. $\int_0^1 \frac{\log x}{1+x} dx = -\frac{\pi^2}{12}$

428. $\int_0^1 \frac{\log x}{1-x} dx = -\frac{\pi^2}{6}$

429. $\int_0^1 \frac{\log(1+x)}{x} dx = \frac{\pi^2}{12}$

430. $\int_0^1 \frac{\log(1-x)}{x} dx = -\frac{\pi^2}{12}$

431. $\int_0^1 (\log x)[\log(1+x]dx = 2 - 2\log 2 - \frac{\pi^2}{12}$

432. $\int_0^1 (\log x)[\log(1-x]dx = \frac{\pi^2}{6}$

433. $\int_0^1 \frac{\log x}{1-x^2} dx = -\frac{\pi^2}{8}$

434. $\int_0^1 \log\left(\frac{1+x}{1-x}\right) \cdot \frac{dx}{x} = \frac{\pi^2}{4}$

435. $\int_0^1 \frac{\log x\, dx}{\sqrt{1-x^2}} = -\frac{\pi}{2}\log 2$

436. $\int_0^1 x^2 \left[\log\left(\frac{1}{x}\right)\right]^n dx = \frac{\Gamma(n-1)}{(m+1)^{n+1}}$, $if\ m+1>0, n+1>0$

437. $\int_0^1 \frac{(x^p - x^q)dx}{\log x} = \log\left(\frac{p+q}{q+1}\right)$, $(p+1>0, q+1>0)$

438. $\int_0^1 \frac{dx}{\sqrt{\log\left(\frac{1}{x}\right)}} = \sqrt{\pi}$

439. $\int_0^{\pi} \log\left(\frac{e^x+1}{e^x-1}\right) dx = \frac{\pi^2}{4}$

440. $\int_0^{\pi/2} (\log \sin x)\, dx = \int_0^{\pi/2} \log \cos x\, dx = -\frac{\pi}{2}\log 2$

441. $\int_0^{\pi/2} (\log \sec x)\, dx = \int_0^{\pi/2} \log \csc x\, dx = \frac{\pi}{2}\log 2$

442. $\int_0^{\pi} x(\log \sin x)\, dx = -\frac{\pi^2}{2}\log 2$

443. $\int_0^{\pi/2} (\sin x)(\log \sin x)\, dx = \log 2 - 1$

444. $\int_0^{\pi/2} (\log \tan x)\, dx = 0$

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445. $\int_0^{\pi} \log(a \pm b\cos x)dx = \pi \log\left(\frac{a+\sqrt{a^2-b^2}}{2}\right)\ ,\ (a \geq b)$

446. $\int_0^{\pi} \log(a^2 - 2ab\cos x + b^2)dx = 2\pi \log a\ ,\ a \geq b > 0$
$= 2\pi \log b\ , b \geq a > 0$

447. $\int_0^{\infty} \frac{\sin ax}{\sinh bx}dx = \frac{\pi}{2b}\tanh\frac{a\pi}{2b}$

448. $\int_0^{\infty} \frac{\cos ax}{\cosh bx}dx = \frac{\pi}{2b}\operatorname{sech}\frac{a\pi}{2b}$

449. $\int_0^{\infty} \frac{dx}{\cosh ax} = \frac{\pi}{2a}$

450. $\int_0^{\infty} \frac{x\,dx}{\sinh ax} = \frac{\pi^2}{2a^2}$

451. $\int_0^{\infty} e^{-ax}(\cosh bx)dx = \frac{a}{a^2-b^2}\ ,\ (0 \leq |b| < a)$

452. $\int_0^{\infty} e^{-ax}(\sinh bx)dx = \frac{b}{a^2-b^2}\ ,\ (0 \leq |b| < a)$

453. $\int_0^{\infty} \frac{\sinh ax}{e^{bx}+1}dx = \frac{\pi}{2b}\csc\frac{a\pi}{b} - \frac{1}{2a}$

454. $\int_0^{\infty} \frac{\sinh ax}{e^{bx}-1}dx = \frac{1}{2b} - \frac{\pi}{2b}\cot\frac{a\pi}{b}$

455. $\int_0^{\pi/2} \frac{dx}{\sqrt{1-k^2\sin^2 x}} = \frac{\pi}{2}\left[1 + \left(\frac{1}{2}\right)^2 k^2 + \left(\frac{1\cdot3}{2\cdot4}\right)^2 k^4 + \left(\frac{1\cdot3\cdot5}{2\cdot4\cdot5}\right)^2 k^6 + \cdots\right]\ ,\ if\ k^2 < 1$

456. $\int_0^{\pi/2} \sqrt{1-k^2\sin^2 x}\ dx = \frac{\pi}{2}\left[1 - \left(\frac{1}{2}\right)^2 k^2 - \left(\frac{1\cdot3}{2\cdot4}\right)^2 k^4 - \left(\frac{1\cdot3\cdot5}{2\cdot4\cdot5}\right)^2 k^6 - \cdots\right]\ ,\ if\ k^2 < 1$

457. $\int_0^{\infty} e^{-x}\log x\,dx = -\gamma = -0{,}5772157$

458. $\int_0^{\infty} e^{-x^2}\log x\,dx = -\frac{\sqrt{\pi}}{4}(\gamma + 2\log 2)$

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Tabel 1. Transformasi Fourier

No	$F(s) = £\{f(t)\}$	$f(t)$
1	$\frac{1}{s}$	1
2	$\frac{1}{s^2}$	t
3	$\frac{1}{s^n}$, $(n = 1,2,3,\dots)$	$\frac{t^{n-1}}{(n-1)!}$
4	$\frac{1}{\sqrt{s}}$	$\frac{1}{\sqrt{\pi t}}$
5	$\frac{1}{s^{\frac{3}{2}}}$	$2\sqrt{\frac{t}{\pi}}$
6	$\frac{1}{s^a}$, $(a > 0)$	$\frac{t^{a-t}}{\Gamma(a)}$
7	$\frac{1}{s-a}$	e^{at}
8	$\frac{1}{(s-a)^2}$	te^{at}
9	$\frac{1}{(s-a)^n}$, $(n = 1,2,3..)$	$\frac{1}{(n-1)!}t^{n-1}e^{at}$
10	$\frac{1}{(s-a)^k}$	$\frac{1}{\Gamma(k)}t^{k-1}e^{at}$
11	$\frac{1}{(s-a)(s-b)}$ $(a \neq b)$	$\frac{1}{(a-b)}(e^{at} - e^{bt})$
12	$\frac{s}{(s-a)(s-b)}$ $(a \neq b)$	$\frac{1}{(a-b)}(ae^{at} - be^{bt})$
13	$\frac{1}{s^2+\omega^2}$	$\frac{1}{\omega}\sin \omega t$
14	$\frac{s}{s^2+\omega^2}$	$\cos \omega t$
15	$\frac{1}{s^2-\omega^2}$	$\frac{1}{a}\sinh at$
16	$\frac{s}{s^2-\omega^2}$	$\cosh at$

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17	$\frac{1}{(s-a)^2+\omega^2}$	$\frac{1}{\omega}e^{at}\sin\omega t$
18	$\frac{s-a}{(s-a)^2+\omega^2}$	$e^{at}\cos\omega t$
19	$\frac{1}{s(s^2+\omega^2)}$	$\frac{1}{\omega^2}(1-\cos\omega t)$
20	$\frac{1}{s^2(s^2+\omega^2)}$	$\frac{1}{\omega^3}(\omega t-\omega t\sin\omega t)$
21	$\frac{1}{(s^2+\omega^2)^2}$	$\frac{1}{2\omega^3}(\sin\omega t-\omega t\cos\omega t)$
22	$\frac{s}{(s^2+\omega^2)^2}$	$\frac{1}{2\omega}\sin\omega t$
23	$\frac{s^2}{(s^2+\omega^2)^2}$	$\frac{1}{2\omega}(\sin\omega t+\omega t\cos\omega t)$
24	$\frac{s}{(s^2-a^2)(s^2-b^2)}\quad(a^2\neq b^2)$	$\frac{1}{b^2-a^2}(\cos at-\cos bt)$
25	$\frac{1}{s^4+4k^4}$	$\frac{1}{2k^3}(\sin kt\cosh kt$ $-\cos \text{kt}\sinh kt)$
26	$\frac{s}{s^4+4k^4}$	$\frac{1}{2k^2}\sin kt-\sinh kt)$
27	$\frac{1}{s^4-4k^4}$	$\frac{1}{2k^3}(\sinh kt-\sin kt)$
28	$\frac{s}{s^4-4k^4}$	$\frac{1}{2k^2}(\cosh kt-\cos kt)$
29	$\sqrt{s-a}-\sqrt{s-b}$	$\frac{1}{2\sqrt{\pi t^3}}\left(e^{bt}-e^{at}\right)$
30	$\frac{1}{\sqrt{s+a}-\sqrt{s+b}}$	$e^{-(a+b)t/2}I_0\left(\frac{a-b}{2}t\right)$
31	$\frac{1}{\sqrt{s^2+a^2}}$	$J_0(at)$

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32	$\frac{s}{(s-a)^{3/2}}$	$\frac{1}{\sqrt{\pi t}}e^{at}(1+2at)$
33	$\frac{s}{(s^2-a^2)^k}$	$\frac{\sqrt{\pi}}{\Gamma(k)}\left(\frac{t}{2a}\right)^{k-\frac{1}{2}}I_{k-\frac{1}{2}}(at)$
34	$e^{-as/s}$	$u(t-a)$
35	e^{-as}	$\delta(t-a)$
36	$\frac{1}{s}e^{-k/s}$	$J_0(2\sqrt{kt})$
37	$\frac{1}{\sqrt{s}}e^{-k/s}$	$\frac{1}{\sqrt{\pi k}}\cos 2\sqrt{kt}$
38	$\frac{1}{s^{3/2}}e^{-k/s}$	$\frac{1}{\sqrt{\pi k}}\sinh 2\sqrt{kt}$
39	$e^{-k\sqrt{s}}\quad(k>0)$	$\frac{1}{2\sqrt{\pi t^3}}e^{k^2/4t}$
40	$\frac{1}{s}\ln s$	$-\ln t-\gamma(\gamma\approx 0{,}5772)$
41	$\ln\frac{s-a}{s-b}$	$\frac{1}{t}\left(e^{bt}-e^{at}\right)$
42	$\ln\frac{s^2+\omega^2}{s^2}$	$\frac{2}{t}(1-\cos at)$
43	$\ln\frac{s^2-\omega^2}{s^2}$	$\frac{2}{t}(1-\cosh at)$
44	$arc\tan\frac{\omega}{s}$	$\frac{1}{t}\sin\omega t$
45	$\frac{1}{s}\ arc\cot s$	$\mathrm{Si}(t)$

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Tabel 2. Fungsi Bessel

x	$J_0(x)$	$J_x(x)$	x	$J_0(x)$	$J_x(x)$		$J_0(x)$	$J_x(x)$
0.0	1.0000	0.0000	3.0	- 0.2601	- 0.3991	6.0	0.1506	- 0.2767
0.1	0.9975	0.0499	3.1	- 0.2921	- 0.3009	6.1	0.1773	- 0.2559
0.2	0.9900	0.0995	3.2	- 0.3202	- 0.2613	6.2	0.2017	- 0.2329
0.3	0.9776	0.1483	3.3	- 0.3443	- 0.2207	6.3	0.2238	- 0.2081
0.4	0.9604	0.1960	3.4	- 0.3643	- 0.1792	6.4	0.2433	- 0.1816
0.5	0,9385	0.2423	3.5	- 0.3801	- 0.1374	6.5	0.2601	- 0.1538
0.6	0.9120	0.2867	3.6	- 0.3918	- 0.0955	6.6	0.2740	- 0.1250
0.7	0.8812	0.3290	3.7	- 0.3992	- 0.0538	6.7	0.2851	- 0.0953
0.8	0.8463	0.3688	3.8	- 0.4026	- 0.0128	6.8	0.2931	- 0.0652
0.9	0.8075	0.4059	3.9	- 0.4018	- 0.0272	6.9	0.2981	- 0.0349
1.0	0.7652	0.4401	4.0	- 0.3971	- 0.0660	7.0	0.3001	- 0.0047
1.1	0.7196	0.4709	4.1	- 0.3887	- 0.1033	7.1	0.2991	0.0252
1.2	0.6711	0.4983	4.2	- 0.3766	- 0.1386	7.2	0.2951	0.0543
1.3	0.6201	0.5220	4.3	- 0.3610	- 0.1719	7.3	0.2881	0.0826
1.4	0.5669	0.5419	4.4	- 0.3423	- 0.2028	7.4	0.2786	0.1096
1.5	0.5118	0.5579	4.5	- 0.3205	- 0.2311	7.5	0.2663	0.1352
1.6	0.4554	0.5699	4.6	- 0.2961	- 0.2556	7.6	0.2516	0.1592
1.7	0.3980	0.5778	4.7	- 0.2693	- 0.2791	7.7	0.2346	0.1813
1.8	0.3400	0.5815	4.8	- 0.2404	- 0.2985	7.8	0.2154	0.2014
1.9	0.2818	0.5812	4.9	- 0.2097	- 0.3147	7.9	0.1944	0.2192
2.0	0.2239	0.5767	5.0	- 0.1776	- 0.3276	8.0	0.1717	0.2346
2.1	0.1666	0.5683	5.1	- 0.1443	- 0.3371	8.1	0.1475	0.2476
2.2	0.1104	0.5560	5.2	- 0.1103	- 0.3432	8.2	0.1222	0.2580
2.3	0.0555	0.5399	5.3	- 0.0758	- 0.3460	8.3	0.0960	0.2657
2.4	0.0025	0.5202	5.4	- 0.0412	- 0.3453	8.4	0.0692	0.2708
2.5	-0.0484	0.4971	5.5	- 0.0068	- 0.3414	8.5	0.0419	0.2731
2.6	-0.0968	0.4708	5.6	0.0270	- 0.3343	8.6	0.0146	0.2728
2.7	- 0.1424	0.4416	5.7	0.0599	- 0.3241	8.7	- 0.125	0.2697
2.8	- 0.1850	0.4097	5.8	0.0917	- 0.3110	8.8	- 0.0392	0.2641
2.9	- 0.2243	0.3754	5.9	0.1220	- 0.2951	8.9	- 0.0653	0.2559
0.0	(- ∞)	(- ∞)	2.5	0.498	0.146	3.0	- 0.309	0.148
0.5	-0.445	- 1.471	3.0	0.377	0.325	3.5	- 0.339	- 0.024
1.0	0.088	- 0.781	3.5	0.189	0.410	4.0	- 0.288	- 0.175
1.5	0.382	- 0.412	4.0	- 0.017	0.398	4.5	- 0.173	- 0.274
2.0	0.510	- 0.107	4.5	- 0.195	0.301	5.0	- 0.026	- 0.303

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Tabel 3. Fungsi Gamma

α	$\alpha(\Gamma)$	α	$\alpha(\Gamma)$	α	$\alpha(\Gamma)$	α	$\alpha(\Gamma)$	α	$\alpha(\Gamma)$
1.00	1.000 000	1.20	0.918 169	1.40	0.887 264	1.60	0.893 515	1.80	0.931 384
1.02	0.988 844	1.22	0.913 106	1.42	0.886 356	1.62	0.895 924	1.82	0.936 845
1.04	0978 438	1.24	0.908 521	1.44	0.885 805	1.64	0.898 642	1.84	0.945 612
1.06	0.968 744	1.26	0.904 397	1.46	0.885 604	1.66	0.901 668	1.86	0.948 687
1.08	0.959 725	1.28	0.900 718	1.48	0.885 747	1.68	0.905 001	1.88	0.955 071
1.10	0.951 351	1.30	0.897 471	1.50	0.886 227	1.70	0.908 639	1.90	0.961 766
1.12	0.943 590	1.32	0.894 640	1.52	0.887 039	1.72	0.912 581	1.92	0.968 774
1.14	0.936 416	1.34	0.892 216	1.54	0.888 178	1.74	0. 916 826	1.94	0.976 099
1.16	0.929 803	1.36	0.890 185	1.56	0.889 639	1.76	0. 921 375	1.96	0.983 743
1.18	0.923 728	1.38	0.888 537	1.58	0.891 420	1.78	0.926 227	1.98	0.991 708
1.20	0.918 169	1.40	0.887 264	1.60	0.893 515	1.80	0.931 384	2.00	1.000 000

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Tabel 4. Fungsi Faktorial

n	n!	log (n!)	n	n!	log (n!)	n	n!	log (n!)
1	1	0.000 000	6	720	2.857 332	11	39 916 332	7.601 156
2	2	0.301 030	7	5 040	3.702 431	12	479 001 600	8.680 337
3	6	0.770 151	8	40 320	4.505 521	13	6 227 020 800	9.794 280
4	24	1.380 211	9	362 880	5.559 763	14	87 178 291 200	10.940 408
5	124	2.079 181	10	3 628 800	6.559 761	15	1 307 674 368 000	12.116 500

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Tabel 5. Fungsi Error, Integral Sinus dan Cosinus

x	erf x	$Si(x)$	ci(x)	x	erf x	$Si(x)$	ci(x)
0.0	0.0000	0.0000	∞	2.0	0.9953	0.6054	- 0.4230
0.2	0.2227	0.1996	1.0442	2.2	0.9981	1.6876	- 0.3751
0.4	0.4284	0.3965	0.3788	2.4	0.9993	1.7525	- 0.3173
0.6	0.6039	0.5881	0.0223	2.6	0.9998	1.8004	- 0.2533
0.8	0.7421	0.7721	- 0.1983	2.8	0.9999	1.8321	- 0.1865
1.0	0.8427	0.9461	- 0.3374	3.0	1.0000	1.8485	- 0.1196
1.2	0.9103	0.1080	- 0.4205	3.2	1.0000	1.8514	- 0.0553
1.4	0.9523	0.2526	- 0.4620	3.4	1.0000	1.8419	0.0045
1.6	0.9763	0.3892	- 0.4717	3.6	1.0000	1.8219	0.0580
1.8	0.9891	0.5058	- 0.4568	3.8	1.0000	1.7934	0.1038
2.0	0.9953	0.6054	- 0.4230	4.0	1.0000	1.7582	0.1410

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Tabel 6. Distribusi Binomial

n	*x*	*p* = 0.1		*p* = 0.2		*p* = 0.3		*p* = 0.4		*p* = 0.5	
		f (*x*)	*F* (*x*)	*f* (*x*)	*F* (*x*)	*f* (*x*)	*F* (*x*)	*f* (*x*)	*F* (*x*)	*f* (*x*)	*F* (*x*)
1	0	0.9000	0.9000	0.8000	0.8000	0.7000	0.7000	0.6000	0.6000	0.5000	0.5000
	1	0.1000	1.0000	0.2000	1.0000	0.3000	1.0000	0.4000	0.1000	0.5000	1.0000
2	0	0.8100	0.8100	0.6400	0.6400	0.4900	0.4900	0.3600	0.3600	0.2500	0.2500
	1	0.1800	0.9900	0.3200	0.9600	0.4200	0.9100	0.4800	0.8400	0.5000	0.7500
	2	0.0100	1.0000	0.0400	1.0000	0.0900	1.0000	0.1600	1.0000	0.2500	1.0000
3	0	0.7290	0.7290	0.5120	0.5120	0.3430	0.3430	0.2160	0.2160	0.1250	0.1250
	1	0.2430	0.9720	0.3840	0.8960	0.4410	0.7840	0.4320	0.6480	0.3750	0.5000
	2	0.0270	0.9990	0.0960	0.9920	0.1890	0.9750	0.2880	0.9360	0.3750	0.8750
	3	0.0100	1.0000	0.0080	1.0000	0.0270	1.0000	0.0640	1.0000	0.1250	1.0000
4	0	0.6561	0.6561	0.4096	0.4096	0.2401	0.2401	0.1296	0.1296	0.0625	0.0625
	1	0.2916	0.9477	0.4096	0.8192	0.4116	0.6517	0.3456	0.4752	0.2500	0.3125
	2	0.0486	0.9963	0.1536	0.9728	0.2646	0.9163	0.3456	0.8208	0.3750	0.6875
	3	0.0036	0.9999	0.0256	0.9984	0.0756	0.9919	0.1536	0.9744	0.2500	0.9375
	4	0.0001	1.0000	0.0016	1.0000	0.0081	1.0000	0.0256	1.0000	0.0625	1.0000
5	0	0.5905	0.5905	0.3277	0.3277	0.1681	0.1681	0.0778	0.0778	0.0313	0.0313
	1	0.3281	0.9185	0.4096	0.7373	0.3602	0.5282	0.2592	0.3370	0.1563	0.1875
	2	0.0729	0.9914	0.2048	0.9421	0.3087	0.8369	0.3456	0.6826	0.3125	0.5000
	3	0.0081	0.9995	0.0512	0.9933	0.1323	0.9692	0.2304	0.9130	0.3125	0.8125
	4	0.0005	1.0000	0.0064	0.9997	0.0284	0.9976	0.0768	0.9898	0.1563	0.9688
	5	0.0000	1.0000	0.0003	1.0000	0.0024	1.0000	0.0102	1.0000	0.0313	1.0000
6	0	0.5314	0.5314	0.2621	0.2621	0.1176	0.1176	0.0467	0.0467	0.0156	0.0156
	1	0.3543	0.8857	0.3932	0.6554	0.3025	0.4202	0.1866	0.2333	0.0938	0.1094
	2	0.0984	0.9841	0.2458	0.9011	0.3241	0.7443	0.3110	0.5443	0.2344	0.3438
	3	0.0146	0.9987	0.0819	0.9830	0.1852	0.9295	0.2765	0.8208	0.3125	0.6563
	4	0.0012	0.9999	0.0154	0.9984	0.0595	0.9891	0.1382	0.9590	0.2344	0.8906
	5	0.0001	1.0000	0.0015	0.9999	0.0102	0.9991	0.0369	0.9959	0.0938	0.9961
	6	0.0000	1.0000	001	1.0000	0.0007	1.0000	0.0041	1.0000	0.0156	1.0000
7	0	0.4783	0.4783	0.2097	0.2097	0.0824	0.0824	0.0280	0.0280	0.0078	0.0078
	1	0.3720	0.8503	0.3670	0.5767	0.2471	0.3294	0.1306	0.1586	0.0547	0.0625
	2	0.1240	0.9743	0.2753	0.8520	0.3177	0.6471	0.2613	0.4199	0.1641	0.2266
	3	0.0230	0.9973	0.1147	0.9667	0.2269	0.8740	0.2613	0.7102	0.2734	0.5000
	4	0.1240	0.9998	0.0287	0.9953	0.0972	0.9712	0.2903	0.9037	0.2734	0.7734
	5	0.0002	1.0000	0.0043	0.9996	0.0250	0.9962	0.1935	0.9812	0.1641	0.9375
	6	0.0000	1.0000	0.0004	1.0000	0.0036	0.9998	0.0774	0.9984	0.0547	0.9922
	7	0.0000	1.0000	0.0000	1.0000	0.0002	1.0000	0.0172	1.0000	0.0078	1.0000
8	0	0.4305	0.4305	0.1678	0.1678	0.0576	0.0576	0.0168	0.0168	0.0039	0.0039
	1	0.3826	0.8131	0.3355	0.5033	0.1977	0.2553	0.0896	0.1064	0.0313	0.0352
	2	0.1488	0.9619	0.2936	0.7969	0.2965	0.5581	0.2090	0.3154	0.1094	0.1445
	3	0.0331	0.9950	0.1468	0.9437	0.2541	0.8059	0.2787	0.5941	0.2188	0.3633
	4	0.0046	0.9996	0.0459	0.9896	0.1361	0.9420	0.2322	0.8263	0.2734	0.6367
	5	0.0004	1.0000	0.0092	0.9988	0.0467	0.9887	0.1239	0.9502	0.2188	0.8555
	6	0.0000	1.0000	0.0011	0.9999	0.0100	0.9987	0.0413	0.9915	0.1094	0.9648
	7	0.0000	1.0000	0.0001	1.0000	0.0012	0.9999	0.0079	0.9993	0.0313	0.9961
	8	0.0000	1.0000	0.0000	1.0000	0.0001	1.0000	0.0007	1.000	0.0039	1.0000