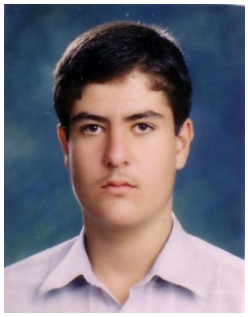
عنوان تحقیق : مجموعه ۱۶۷ فرمول انتگرال نامعین

محقق:امین طاهری (دانشجوی کارشناسی برق)



بهار ۸۷

انتگرال هایی که شامل عبارت ax+b هستند

1 - $\int \frac{xdx}{ax+b} = \frac{1}{a^2}[ax + b - b\ln(ax + b)]$

2 - $\int \frac{xdx}{(ax+b)^2} = \frac{1}{a^2}[\frac{b}{ax+b} + \ln(ax + b)]$

3 - $\int \frac{xdx}{(ax+b)^3} = \frac{1}{a^2}[\frac{-1}{ax+b} + \frac{b}{2(ax+b)^2}]$

4 – $\int \frac{xdx}{(ax+b)^4} = \frac{1}{a^2}[\frac{-1}{2(ax+b)^2} + \frac{b}{3(ax+b)^3}]$

5 – $\int \frac{xdx}{(ax+b)^n} = \frac{1}{a^2}\left[\frac{-1}{(n-2)(ax+b)^{n-2}} + \frac{b}{(n-1)(ax+b)^{n-1}}\right], n \neq 1,2$

6 – $\int \frac{x^2dx}{ax+b} = \frac{1}{a^3}[\frac{(ax+b)^2}{2} - 2b(ax + b) + b^2\ln(ax + b)]$

7 – $\int \frac{x^2dx}{(ax+b)^2} = \frac{1}{a^3}[ax + b - \frac{b^2}{ax+b} - 2b\ln(ax + b)]$

8 – $\int \frac{x^2dx}{(ax+b)^3} = \frac{1}{a^3}[\frac{2b}{ax+b} - \frac{b^2}{2(ax+b)^2} + \ln(ax + b)]$

9 – $\int \frac{x^2dx}{(ax+b)^4} = \frac{1}{a^3}[\frac{-1}{ax+b} + \frac{b}{(ax+b)^2} - \frac{b^2}{3(ax+b)^3}]$

10 – $\int \frac{x^2dx}{(ax+b)^n} = \frac{1}{a^2}\left[\frac{-1}{(n-3)(ax+b)^{n-2}} + \frac{2b}{(n-2)(ax+b)^{n-2}} - \frac{b^2}{(n-1)(ax+b)^{n-1}}\right], n \neq 1,2,3$

11 – $\int x^m(ax + b)^n dx = \frac{1}{m+n+1}[x^{m+1}(ax + b)^n + bn\int x^m(ax + b)^{n-1}dx], m + n \neq -1$

12 - $\int x^m(ax + b)^n dx = \frac{1}{b(n+1)}[-x^{m+1}(ax + b)^{n+1} + (m + n + 2)\int x^m(ax + b)^{n+1}dx], b \neq 0, n \neq -1$

انتگرال هایی که شامل عبارت $ax^2 + bx + c$ هستند

13 - $\int \frac{dx}{ax^2+bx+c} = \frac{2}{\sqrt{4ac-b^2}}\arctan\frac{2ax+b}{\sqrt{4ac-b^2}}, b^2 - 4ac < 0$

14 - $\int \frac{dx}{ax^2+bx+c} = \frac{1}{\sqrt{b^2-4ac}}\ln\frac{2ax+b-\sqrt{b^2-4ac}}{2ax+b+\sqrt{b^2-4ac}}, b^2 - 4ac > 0$

15 - $\int \frac{dx}{(ax^2+bx+c)^2} = \frac{1}{(4ac-b)^2}[\frac{2ax+b}{ax^2+bx+c} + 2a\int \frac{dx}{ax^2+bx+c}], b^2 - 4ac \neq 0$

16 - $\int \frac{dx}{(ax^2+bx+c)^3} = \frac{1}{(4ac-b^2)^2}[\frac{(4ac-b^2)(2ax+b)}{2(ax^2+bx+c)^2} + \frac{3a(2ax+b)}{ax^2+bx+c} + 6a^2\int \frac{dx}{ax^2+bx+c}], b^2 - 4ac \neq 0$

17 - $\int \frac{dx}{(ax^2+bx+c)^n} = \frac{1}{(n-1)(4ac-b^2)}[\frac{2ax+b}{(ax^2+bx+c)^{n-1}} + 2a(2n - 3)\int \frac{dx}{(ax^2+bx+c)^{n-1}}], n \neq 1, b^2 - 4ac \neq 0$

انتگرال هاییکه شامل عبارت $\sqrt{ax+b}$ هستند

18 - $\int x\sqrt{ax+b}\ dx = \frac{2(3ax-2b)(ax+b)^{\frac{3}{2}}}{15a^2}$

19 - $\int x^2\sqrt{ax+b}\,dx = \frac{2(15a^2x^2-12abx+8b^2)(ax+b)^{\frac{3}{2}}}{105a^3}$

20 - $\int \frac{\sqrt{ax+b}}{x}\ dx = 2\sqrt{ax+b} + 2\sqrt{b}\ \ln\frac{\sqrt{ax+b}-\sqrt{b}}{\sqrt{x}}\ , b>0$

21 - $\int \frac{\sqrt{ax+b}}{x}\ dx = 2\sqrt{ax+b} - 2\sqrt{-b}\ \text{arc}\ \tan\frac{\sqrt{ax+b}}{\sqrt{-b}}\ , b<0$

22 - $\int \frac{\sqrt{ax+b}}{x^2}\ dx = -\frac{\sqrt{ax+b}}{x} + \frac{a}{\sqrt{b}}\ \ln\frac{\sqrt{ax+b}-\sqrt{b}}{\sqrt{x}}\ , b>0$

23 – $\int \frac{\sqrt{ax+b}}{x^2}\ dx = -\frac{\sqrt{ax+b}}{x} + \frac{a}{\sqrt{-b}}\ \text{arc}\ \tan\frac{\sqrt{ax+b}}{\sqrt{-b}}\ , b<0$

24 - $\int \frac{dx}{x\sqrt{ax+b}} = \frac{2}{\sqrt{b}}\ln\frac{\sqrt{ax+b}-\sqrt{b}}{\sqrt{x}}\ , b>0$

25 - $\int \frac{dx}{x\sqrt{ax+b}} = \frac{2}{\sqrt{-b}}\ \text{arc}\ \tan\frac{\sqrt{ax+b}}{\sqrt{-b}}\ , b<0$

26 - $\int \frac{dx}{x^2\sqrt{ax+b}} = -\frac{\sqrt{ax+b}}{bx} - \frac{a}{b^{\frac{3}{2}}}\ \ln\frac{\sqrt{ax+b}-\sqrt{b}}{\sqrt{x}}\ , b>0$

27 - $\int \frac{dx}{x^2\sqrt{ax+b}} = -\frac{\sqrt{ax+b}}{bx} + \frac{a}{(-b)^{\frac{3}{2}}}\ arc\ \tan\frac{\sqrt{ax+b}}{\sqrt{-b}}\ , b<0$

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

29 – $\int \frac{x^2\,dx}{\sqrt{ax+b}} = \frac{2(3a^2x^2-4abx+8b^2)\sqrt{ax+b}}{15a^3}$

30 - $\int \frac{x^n dx}{\sqrt{ax+b}} = \frac{2x^n\sqrt{ax+b}}{(2n+1)a} - \frac{2nb}{(2n+1)a}\int \frac{x^{n-1}dx}{\sqrt{ax+b}}\ , n \neq -\frac{1}{2}$

31 - $\int \frac{dx}{x^n\sqrt{ax+b}} = \frac{-\sqrt{ax+b}}{(n-1)bx^{n-1}} - \frac{(2n-3)a}{2(n-1)b}\int \frac{dx}{x^{n-1}\sqrt{ax+b}}\ , b\neq 0, n\neq 1$

32 - $\int x^n\sqrt{ax+b}\ dx = \frac{2}{(2n+3)a}\ [x^n(ax+b)^{\frac{3}{2}} - bn\int x^{n-1}\sqrt{ax+b}\ dx]\ , n = -\frac{3}{2}$

33 – $\int \frac{\sqrt{ax+b}}{x^n}\ dx = \frac{1}{n-1}\ [-\frac{\sqrt{ax+b}}{x^{n-1}} + \frac{a}{2}\int \frac{dx}{x^{n-1}\sqrt{ax+b}}]\ , n\neq 1$

انتگرال هایی که شامل عبارت $\sqrt{x^2 \pm a^2}$ هستند.

34 - $\int \sqrt{x^2 \pm a^2}\ dx = \frac{x}{2}\sqrt{x^2 \pm a^2}\ \pm \frac{a^2}{2}\ln(x + \sqrt{x^2 \pm a^2})$

35- $\int x^2\sqrt{x^2 \pm a^2}\ dx = \frac{x}{8}(2x^2 \pm a^2)\sqrt{x^2 \pm a^2} - \frac{a^4}{8}\ln(x + \sqrt{x^2 \pm a^2})$

36 – $\int (x^2 \pm a^2)^{\frac{3}{2}}\, dx = \frac{x}{8}(2x^2 \pm 5a^2)\sqrt{x^2 \pm a^2} + \frac{3a^4}{8}\ln(x + \sqrt{x^2 \pm a^2})$

37 - $\int x^2(x^2 \pm a^2)^{\frac{3}{2}}\, dx = \frac{x}{48}(8x^4 \pm 14a^2x^2 + 3a^4)\sqrt{x^2 \pm a^2} \mp \frac{a^6}{16}\ln(x + \sqrt{x^2 \pm a^2})$

38 – $\int (x^2 \pm a^2)^{\frac{5}{2}}\, dx = \frac{x}{48}(8x^4 \pm 26a^2x^2 + 32a^4)\sqrt{x^2 \pm a^2}\ \pm \frac{5a^6}{16}\ln(x + \sqrt{x^2 \pm a^2})$

39 - $\int x^2(x^2 \pm a^2)^{\frac{5}{2}} dx = \frac{x}{384}(48x^6 \pm 136a^2x^4 + 118a^4x^2 \pm 15a^6)\sqrt{x^2 \pm a^2} - \frac{5a^8}{128}\ln(x + \sqrt{x^2 \pm a^2})$

40 - $\int \frac{\sqrt{x^2+a^2}}{x} dx = \sqrt{x^2 + a^2} - a\ln\frac{a+\sqrt{x^2+a^2}}{x}$

41 - $\int \frac{\sqrt{x^2-a^2}}{x}\ dx = \sqrt{x^2 - a^2} + a\ \arcsin\frac{a}{x}$

42 - $\int \frac{\sqrt{x^2 \pm a^2}}{x^2}\ dx = -\frac{\sqrt{x^2 \pm a^2}}{x} + \ln(x + \sqrt{x^2 \pm a^2})$

43 – $\int \frac{(x^2+a^2)^{\frac{3}{4}}}{x}\ dx = \frac{1}{3}(x^2 + 4a^2)\sqrt{x^2 + a^2} - a^3\ln\frac{a+\sqrt{x^2+a^2}}{x}$

44 – $\int \frac{(x^2-a^2)^{\frac{3}{2}}}{x}\ dx = \frac{1}{3}(x^2 - 4a^2)\sqrt{x^2 - a^2}\ - a^3\ \arcsin\frac{a}{x}$

45 – $\int \frac{(x^2 \pm a^2)^{\frac{3}{2}}}{x^2}\ dx = \frac{1}{2x}(x^2 \mp 2a^2)\sqrt{x^2 \pm a^2} \pm \frac{3a^2}{2}\ln(x + \sqrt{x^2 \pm a^2})$

46 – $\int \frac{(x^2+a^2)^{\frac{5}{2}}}{x}\ dx = \frac{1}{15}(3x^4 + 11a^2x^2 + 23a^4)\sqrt{x^2 + a^2} - a^5\ln\frac{a+\sqrt{x^2+a^2}}{x}$

47 - $\int \frac{(x^2-a^2)^{\frac{5}{2}}}{x}\ dx = \frac{1}{15}(3x^4 - 11a^2x^2 + 23a^4)\sqrt{x^2 - a^2} + a^5\ arc\sin\frac{a}{x}$

48 – $\int \frac{(x^2 \pm a^2)}{x^2}\ dx = \frac{1}{8x}(2x^4 \pm 9a^2x^2 - 8a^4)\sqrt{x^2 \pm a^2} + \frac{15a^4}{8}\ln(x + \sqrt{x^2 \pm a^2})$

49 - $\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln(x + \sqrt{x^2 \pm a^2})$

50 - $\int \frac{x^2 dx}{\sqrt{x^2+a^2}} = \frac{x}{2}\sqrt{x^2 \pm a^2}\ \mp \frac{a^2}{2}\ln(x + \sqrt{x^2 \pm a^2})$

51 - $\int \frac{dx}{(x^2 \pm a^2)^{\frac{3}{2}}} = \pm \frac{x}{a^2\sqrt{x^2 \pm a^2}}$

52 - $\int \frac{x^2dx}{(x^2\pm a^2)^{\frac{3}{2}}} = -\frac{x}{\sqrt{x^2\pm a^2}} + \ln(x+\sqrt{x^2\pm a^2})$

53 - $\int \frac{dx}{(x^2\pm a^2)^{\frac{5}{2}}} = \frac{x(2x^2\pm 3a^2)}{3a^4(x^2\pm a^2)^{\frac{3}{2}}}$

54 - $\int \frac{x^2dx}{(x^2\pm a^2)^{\frac{5}{2}}} = \pm\frac{x^3}{3a^2(x^2\pm a^2)^{\frac{3}{2}}}$

55 - $\int \frac{dx}{x\sqrt{x^2+a^2}} = -\frac{1}{a}\ln\frac{a+\sqrt{x^2+a^2}}{x}$

56 - $\int \frac{dx}{x\sqrt{x^2-a^2}} = -\frac{1}{a}\arcsin\frac{a}{x}$

57 - $\int \frac{dx}{x^2\sqrt{x^2\pm a^2}} = \mp\frac{1}{a^2x}\sqrt{x^2\pm a^2}$

58 - $\int \frac{dx}{x(x^2+a^2)^{\frac{3}{2}}} = \frac{1}{a^2\sqrt{x^2+a^2}} - \frac{1}{a^3}\ln\frac{a+\sqrt{x^2+a^2}}{x}$

59 - $\int \frac{dx}{x(x^2-a^2)^{\frac{3}{2}}} = -\frac{1}{a^2\sqrt{x^2-a^2}} + \frac{1}{a^3}\arcsin\frac{a}{x}$

60 - $\int \frac{dx}{x^2(x^2+a^2)^{\frac{3}{2}}} = -\frac{(2x^2\pm a^2)}{a^4x\sqrt{x^2\pm a^2}}$

61 - $\int \frac{dx}{x(x^2+a^2)^{\frac{5}{2}}} = \frac{3a^2+4a^2}{3a^4(x^2+a^2)^{\frac{3}{2}}} - \frac{1}{a^5}\ln\frac{a+\sqrt{x^2+a^2}}{x}$

62 - $\int \frac{dx}{x(x^2-a^2)^{\frac{5}{2}}} = \frac{3x^2-4a^2}{3a^4(x^2-a^2)^{\frac{3}{2}}} - \frac{1}{a^5}\ arc\sin\frac{a}{x}$

63 - $\int \frac{dx}{x^2(x^2\pm a^2)^{\frac{5}{2}}} = \mp\frac{8x^4\pm 12a^2x^2+3a^4}{3a^6x(x^2\pm a^2)^{\frac{3}{2}}}$

انتگرال هایی که شامل عبارت $\sqrt{a^2-x^2}$ هستند.

64 - $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}\arcsin\frac{x}{a}$

65 - $\int x^2\sqrt{a^2-x^2}\,dx = \frac{x}{8}(2x^2-a^2)\sqrt{a^2-x^2} + \frac{a^4}{8}\arcsin\frac{x}{a}$

66 – $\int (a^2-x^2)^{\frac{3}{2}}\,dx = \frac{x}{8}(5a^2-2x^2)\sqrt{a^2-x^2} + \frac{3a^4}{8}\arcsin\frac{x}{a}$

67 - $\int x^2(a^2-x^2)^{\frac{3}{2}}\,dx = -\frac{x}{48}(3a^4-14a^2x^2+8x^4)\sqrt{a^2-x^2} + \frac{a^6}{16}\arcsin\frac{x}{a}$

68 – $\int (a^2-x^2)^{\frac{5}{2}}\,dx = \frac{x}{48}(33a^4-26a^2x^2+8x^4)\sqrt{(a^2-x^2)} + \frac{5a^6}{16}\arcsin\frac{x}{a}$

69 - $\int x^2(a^2-x^2)^{\frac{5}{2}}\,dx = -\frac{x}{384}(15a^6-118a^4x^2+136a^2x^4-48x^6)\sqrt{(a^2-x^2)}+\frac{5a^8}{128}\arcsin\frac{x}{a}$

70 - $\int \frac{\sqrt{(a^2-x^2)}}{x}\,dx = \sqrt{(a^2-x^2)}-a\ln\frac{a+\sqrt{(a^2-x^2)}}{x}$

71 - $\int \frac{\sqrt{a^2-x^2}}{x^2}\,dx = -\frac{\sqrt{a^2-x^2}}{x}-\arcsin\frac{x}{a}$

72 - $\int \frac{(a^2-x^2)^{\frac{3}{2}}}{x}\,dx = \frac{1}{3}(4a^2-x^2)\sqrt{a^2-x^2}+a^3\ln\frac{a-\sqrt{a^2-x^2}}{x}$

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

74 - $\int \frac{(a^2-x^2)^{\frac{5}{2}}}{x}\,dx = \frac{1}{15}(23a^4-11a^2x^2+3x^4)\sqrt{a^2-x^2}-a^5\ln\frac{a+\sqrt{a^2-x^2}}{x}$

75 - $\int \frac{x^2}{\sqrt{a^2-x^2}}\,dx = -\frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}\arcsin\frac{x}{a}$

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

77 - $\int \frac{x^2}{(a^2-x^2)^{\frac{3}{2}}}\,dx = \frac{x}{\sqrt{a^2-x^2}}-\arcsin\frac{x}{a}$

78 - $\int \frac{dx}{(a^2-x^2)^{\frac{5}{2}}} = \frac{x(3a^2-2x^2)}{3a^4(a^2-x^2)^{\frac{3}{2}}}$

79 - $\int \frac{x^2}{(a^2-x^2)^{\frac{5}{2}}}\,dx = \frac{x^3}{3a^2(a^2-x^2)^{\frac{3}{2}}}$

80 - $\int \frac{dx}{x\sqrt{a^2-x^2}} = \frac{1}{a}\ln\frac{a-\sqrt{a^2-x^2}}{x}$

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

82 - $\int \frac{dx}{x(a^2-x^2)^{\frac{3}{2}}} = \frac{1}{a^2\sqrt{a^2-x^2}}+\frac{1}{a^2}\ln\frac{a-\sqrt{a^2-x^2}}{x}$

83 - $\int \frac{dx}{x^2(a^2-x^2)^{\frac{3}{2}}} = \frac{2x^2-a^2}{a^4x\sqrt{a^2-x^2}}$

84 - $\int \frac{dx}{x(a^2-x^2)^{\frac{5}{2}}} = \frac{4a^2-3x^2}{3a^4(a^2-x^2)^{\frac{3}{2}}}-\frac{1}{a^5}\ln\frac{a+\sqrt{a^2-x^2}}{x}$

85 - $\int \frac{dx}{x^2(a^2-x^2)^{\frac{5}{2}}} = -\frac{3a^4-12a^2x^2+8x^4}{3a^4x(a^2-x^2)^{\frac{3}{2}}}$

انتگرال هایی که شامل قوه ای از خطوط مثلثاتی باشد .

86 - $\int \sin^2 x\, dx = \frac{x}{2} - \frac{\sin 2x}{4}$

87 - $\int \sin^3 x dx = \frac{\cos 3x}{12} - \frac{3\cos x}{4}$

88 - $\int \sin^4 x\, dx = \frac{3x}{8} - \frac{\sin 2x}{4} + \frac{\sin 4x}{32}$

89 - $\int \sin^5 x\, dx = -\frac{5\cos x}{8} + \frac{5\cos 3x}{48} - \frac{\cos 5x}{80}$

90 – $\int \sin^6 x\, dx = \frac{5x}{16} - \frac{15\sin 2x}{64} + \frac{3\sin 4x}{64} - \frac{\sin 6x}{192}$

91 - $\int \sin^7 x\, dx = -\frac{35\cos x}{64} + \frac{7\cos 3x}{64} - \frac{7\cos 5x}{320} + \frac{\cos 7x}{448}$

92 - $\int \cos^2 x\, dx = \frac{x}{2} + \frac{\sin 2x}{4}$

93 - $\int \cos^3 x\, dx = \frac{3\sin x}{4} + \frac{\sin 3x}{12}$

94 - $\int \cos^4 x\, dx = \frac{3x}{8} + \frac{\sin 2x}{4} + \frac{\sin 4x}{32}$

95 - $\int \cos^5 x\, dx = \frac{5\sin x}{8} + \frac{5\sin 3x}{48} + \frac{\sin 5x}{80}$

96 - $\int cos^6 x\ dx = \frac{5x}{16} + \frac{15\sin 2x}{64} + \frac{3\sin 4x}{64} + \frac{\sin 6x}{192}$

97 - $\int \cos^7 x\, dx = \frac{35\sin x}{64} + \frac{7\sin 3x}{64} + \frac{7\sin 5x}{320} + \frac{\sin 7x}{448}$

98 - $\int \tan^2 x\, dx = \tan x\_x$

99 - $\int \tan^3 x\, dx = \frac{\tan^2 x}{2} + \ln\cos x$

100 - $\int \tan^4 x\, dx = \frac{\tan^3 x}{3} - \tan x + x$

101 - $\int \tan^5 x\, dx = \frac{\tan^4 x}{4} - \frac{\tan^2 x}{2} - \ln\cos x$

102 - $\int x^2 \sin x\, dx = 2x\sin x - (x^2 - 2)\cos x$

103 - $\int x^3 \sin x\, dx = 3(x^2 - 2)\sin x - (x^3 - 6x)\cos x$

104 - $\int x^4 \sin x\, dx = 4(x^3 - 6x)\sin x - (x^4 - 12x^2 + 24)\cos x$

105 - $\int x^n \sin x\, dx = -x^n \cos x + n\int x^{n-1}\cos x\, dx$

106 - $\int x\cos dx = \cos x + x\sin x$

107 - $\int x^2 \cos x \, dx = 2x \cos x + (x^2 - 2) sinx$

108 - $\int x^3 \cos x \, dx = 3(x^2 - 2)\cos x + (x^3 - 6x) sinx$

109 - $\int x^4 \cos x \, dx = 4(x^3 - 6x)\cos x + (x^4 - 12x^2 + 24)\sin x$

110 - $\int x^n \cos x \; dx = x^n \sin x - n \int x^{n-1} sinx \; dx$

111 - $\int x \sin^2 x \; dx = \frac{1}{4}x^2 - \frac{1}{4}x \sin 2x - \frac{1}{8}\cos 2x$

انتگرال های که شامل sin x و cos x هستند

112 - $\int \frac{dx}{1+\sin x} = \frac{\sin x - 1}{\cos x}$

113 - $\int \frac{dx}{1-\sin x} = \frac{1+\sin x}{\cos x}$

114 - $\int \frac{dx}{(1+\sin x)^2} = -\frac{(1-\sin x)(2+\sin x)}{3 \cos x (1+\sin x)}$

115 - $\int \frac{dx}{(1-\sin x)^2} = \frac{(1+\sin x)(2-\sin x)}{3\cos x(1-\sin x)}$

116 - $\int \frac{dx}{1+\cos x} = \frac{1-\cos x}{\sin x}$

117 - $\int \tan^6 x \, dx = \frac{\tan^5 x}{5} - \frac{\tan^3 x}{3} + \tan x - x$

118 - $\int \tan^7 x \, dx = \frac{\tan^6 x}{6} - \frac{\tan^4 x}{4} + \frac{\tan^2}{2} + \ln \cos x$

119 - $\int \cos^2 x \, dx = -\cot x - x$

120 - $\int \cot^3 x \, dx = -\frac{\cot^2 x}{2} - \ln \sin x$

121 - $\int \cot^4 x \, dx = -\frac{\cot^3 x}{3} + \cot x + x$

122 - $\int \cot^5 x \, dx = -\frac{\cot^4 x}{4} + \frac{\cot^2 x}{2} + \ln \sin x$

123 - $\int \cot^6 x \, dx = -\frac{\cot^5 x}{5} + \frac{\cot^3 x}{3} - \cot x - x$

124 - $\int \cot^7 x \, dx = -\frac{\cot^6 x}{6} + \frac{\cot^4 x}{4} - \frac{\cot^2 x}{2} - \ln \sin x$

125 - $\int \sec^3 x \, dx = \frac{1}{2}\sec x \tan x + \frac{1}{2} \ln (\sec x + \tan x)$

126 - $\int \sec^4 x \, dx = \tan x + \frac{1}{3}\tan^3 x$

127 - $\int \sec^5 x \, dx = \frac{3}{8}\sec x \tan x + \frac{1}{4}\sec^3 x \tan x + \frac{3}{8}\ln(\sec x + \tan x)$

128 - $\int \sec^6 x\, dx = \tan x + \frac{2}{3}\tan^3 x + \frac{1}{5}\tan^5 x$

129 - $\int \csc^2 x\, dx = -\frac{1}{2}\cot x \csc x + \frac{1}{2}\ln(\csc x - \cot x)$

130 - $\int \csc^4 x\, dx = -\cot x - \frac{1}{3}\cot^3 x$

131 - $\int c\,sc^5 x dx = -\frac{3}{8}\cot x \csc x - \frac{1}{4}\cot x\ \csc x^3\, x + \frac{3}{8}\ln(\csc x - \cot x)$

132 - $\int c\,sc^6 x\, dx = -\cot x - \frac{2}{3}\cot^3 x - \frac{1}{5}\cot^5 x$

133 - $\int \csc^7 x dx = -\frac{5}{16}\cot x \csc x - \frac{5}{24}\cot x \csc^3 x - \frac{1}{6}\cot x \csc^5 x + \frac{5}{16}\ln(\csc x - \cot x)$

134 - $\int \sec^7 x\, dx = \frac{5}{16}\sec x \tan x + \frac{5}{24}\tan x \sec^3 x + \frac{1}{6}\tan x \sec^5 x + \frac{5}{16}\ln(\sec x - \tan x)$

انتگرال هایی که دارای حاصلضرب قوه ای از x و sinx یا cosx هستند.

135 – $\int x \sin x\, dx = \sin x - x\cos x$

136 - $\int \frac{dx}{1-\cos x} = -\frac{1+\cos x}{\sin x}$

137 - $\int \frac{dx}{(1+\cos x)^2} = \frac{(1-\cos x)(2+\cos x)}{(3\sin x)(1+\cos x)} = \frac{1}{2}\tan\frac{x}{2} + \frac{1}{6}\tan^3\frac{x}{2}$

138 – $\int \frac{dx}{(1-\cos x)^2} = -\frac{(1+\cos x)(2-\cos x)}{2\sin x(1-\cos x)} = -\frac{1}{2}\cot\frac{x}{2} - \frac{1}{6}\cot^3\frac{x}{2}$

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

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

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

142 - $\int sin^m x\, cos^n x\, dx = \frac{sin^{m+1} x cos^{n-1} x}{m+n} + \frac{n-1}{m+n}\int sin^m x cos^{n-2} x\, dx, m \neq -n$

143 $\int \sin^m x \cos^n x\, dx = -\frac{\sin^{m-1} x \cos^{n+1} x}{m+n} + \frac{m-1}{m+n}\int \sin^{m-2} x \cos^n x\, dx, m \neq -n$

144 – $\int \frac{\sin^m x}{\cos^n x}\, dx = -\frac{sin^{m-1} x}{(m-n)cos^{n-1} x} + \frac{m-1}{m-n}\int \frac{sin^{m-2} x}{cos^n x}\, dx, m \neq n$

145 - $\int \frac{\cos^n x}{\sin^m x}\, dx = \frac{\cos^{n-1} x}{(n-m)\sin^{m-1} x} + \frac{n-1}{n-m}\int \frac{\cos^{n-2} x}{\sin^m x}\, dx, m \neq n$

146 - $\int \frac{dx}{\sin^m x \cos^n x} = \frac{1}{(n-1)\sin^{m-1} x \cos^{n-1} x} + \frac{m+n-2}{n-1}\int \frac{dx}{\sin^m x \cos^{n-2} x}, n > 1$

147 - $\int \frac{dx}{\sin^m x \cos^n x} = \frac{-1}{(m-1)\sin^{m-1}x\cos^{n-1}x} + \frac{m+n-2}{m-1} \int \frac{dx}{\sin^{m-2}x \cos^n x}$, $m > 1$

انتگرال هایی که شامل عبارت e^{ax} یا $\ln x$ هستند.

148 - $\int xe^{ax}\, dx = e^{ax}(\frac{x}{a} - \frac{1}{a^2})$

149 - $\int x^2 e^{ax}\, dx = e^{ax}(\frac{x^2}{a} - \frac{2x}{a^2} + \frac{2}{a^3})$

150 - $\int x^3 e^{ax}\, dx = e^{ax}(\frac{x^3}{a} - \frac{3x^2}{a^2} + \frac{6x}{a^3} - \frac{6}{a^4})$

151 - $\int x^4 e^{ax}\, dx = e^{ax}(\frac{x^4}{a} - \frac{4x^3}{a^2} + \frac{12x^2}{a^3} - \frac{24x}{a^4} + \frac{24}{a^5})$

152 - $\int x^n e^{ax}\, dx = e^{ax}[\frac{x^n}{a} - \frac{nx^{n-1}}{a^2} + \frac{n(n-1)x^{n-2}}{a^3} - \cdots + (-1)^{n-1}\frac{n!x}{a^n} + (-1)^n \frac{n!}{a^{n+1}}]$

153 - $\int \frac{e^{ax}}{x^n}\, dx = -\frac{e^{ax}}{(n-1)x^{n-1}} + \frac{a}{n-1} \int \frac{e^{ax}\, dx}{x^{n-1}}$, $n > 1$

154 - $\int \frac{dx}{a+b\, e^{cx}} = \frac{x}{a} - \frac{1}{ac}\ln(a + b\, e^{cx}), ac \neq 0$

155 – $\int \ln x\, dx = x \ln x - x$

156 – $\int x \ln x\, dx = \frac{x^2}{2}\ln x - \frac{x^2}{4}$

157 - $\int x^2 \ln x\, dx = \frac{x^3}{3}\ln x - \frac{x^3}{9}$

158 - $\int x^3 \ln x\, dx = \frac{x^4}{4}\ln x - \frac{x^4}{16}$

159 - $\int x^n \ln x\, dx = \frac{x^{n+1}}{n+1}\ln x - \frac{x^{n+1}}{(n+1)^2}$, $n \neq -1$

160 - $\int \frac{\ln x}{x^n}\, dx = -\frac{\ln x}{(n-1)x^{n-1}} - \frac{1}{(n-1)^2 x^{n-1}}$, $n \neq 1$

161 – $\int \frac{(\ln x)^2}{x^n}\, dx = -\frac{(\ln x)^2}{(n-1)x^{n-1}} - \frac{2\ln x}{(n-1)^2 x^{n-1}} - \frac{2}{(n-1)^3 x^{n-1}}$, $n \neq 1$

انتگرال هایی که شامل عبارت e^{ax} و $\sin bx$ یا $\cos bx$ هستند.

162 - $\int e^{ax}\sin bx\, dx = \frac{e^{ax}(a\sin bx - b\cos bx)}{a^2+b^2}$

163 - $\int e^{ax}\cos bx\, dx = \frac{e^{ax}(a\cos bx + b\sin bx)}{a^2+b^2}$

164 - $\int e^{ax}\sin^2 x\, dx = \frac{e^{ax}}{4+a^2}\,[(\sin x)(a\sin x - 2\cos x) + \frac{2}{a}$

165 - $\int e^{ax}\cos^2 x\, dx = \frac{e^{ax}}{4+a^2}\,[(\cos x)(a\cos x + 2\sin x) + \frac{2}{a}]$

166 - $\int e^{ax}\sin^{n}x\,dx = \frac{e^{ax}(\sin^{n-1}x)(a\cos x+n\sin x)}{a^{2}+n^{2}} + \frac{n(n-1)}{a^{2}+n^{2}}\int e^{ax}\sin^{n-2}x\,dx$

167- $\int e^{ax}\cos^{n}x\,dx = \frac{e^{ax}(\cos^{n-1}x)(a\cos x+n\sin x)}{a^{2}+n^{2}} + \frac{n(n-1)}{a^{2}+n^{2}}\int e^{ax}\cos^{n-2}x\,dx$