

ТАБЛИЦА 4  
ИНТЕГРАЛЫ ВИДА

$$\int x^{\pm n} \frac{dx}{(a+bx)^m(c+fx)^k}, \quad af \neq bc;$$

$n=0, 1, 2, \dots, m=1, 2, 3, \dots, k=1, 2, 3, \dots$

$$4.1. \int \frac{dx}{(a+bx)(c+fx)} = -\frac{1}{\Delta} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.2. \int \frac{dx}{(a+bx)(c+fx)^2} = \frac{-1}{\Delta(c+fx)} + \frac{b}{\Delta^2} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.3. \int \frac{dx}{(a+bx)^2(c+fx)^2} = -\frac{1}{\Delta^2} \left( \frac{b}{a+bx} + \frac{f}{c+fx} \right) + \frac{2bf}{\Delta^3} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.4. \int \frac{dx}{(a+bx)(c+fx)^3} = \frac{2b(c+fx)-\Delta}{2\Delta^2(c+fx)^2} - \frac{b^2}{\Delta^3} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.5. \int \frac{dx}{(a+bx)^2(c+fx)^3} = \frac{b^2}{\Delta^3(a+bx)} - \frac{f}{2\Delta^2(c+fx)^2} + \\ + \frac{2bf}{\Delta^4(c+fx)} - \frac{3b^2f}{\Delta^4} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.6. \int \frac{dx}{(a+bx)^3(c+fx)^3} = \frac{b^2}{2\Delta^3(a+bx)^2} + \frac{3b^2f}{\Delta^4(a+bx)} - \\ - \frac{f^2}{2\Delta^4(c+fx)^2} + \frac{3bf^2}{\Delta^4(c+fx)} - \frac{6b^2f^2}{\Delta^5} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.7. \int \frac{dx}{(a+bx)^m(c+fx)^k} = -\frac{1}{(k-1)\Delta(a+bx)^{m-1}(c+fx)^{k-1}} - \\ - \frac{(m+k-2)b}{(k-1)\Delta} \int \frac{dx}{(a+bx)^m(c+fx)^{k-1}} \quad (k \geq 2); \\ = \frac{1}{(m-1)\Delta(a+bx)^{m-1}(c+fx)^{k-1}} + \\ + \frac{(m+k-2)f}{(m-1)\Delta} \int \frac{dx}{(a+bx)^{m-1}(c+fx)^k} \quad (m \geq 2).$$

$$4.8. \int \frac{x dx}{(a+bx)(c+fx)} = \frac{1}{\Delta} \left[ \frac{a}{b} \ln |a+bx| - \frac{c}{f} \ln |c+fx| \right].$$

$$4.9. \int \frac{x dx}{(a+bx)(c+fx)^2} = \frac{c}{f\Delta(c+fx)} - \frac{af}{b\Delta^2} \ln \left| \frac{a+bx}{c+fx} \right|$$

$$4.10. \int \frac{x dx}{(a+bx)^2(c+fx)^2} = \\ = \frac{1}{\Delta^2} \left[ \frac{a}{a+bx} + \frac{c}{c+fx} \right] - \frac{af+bc}{\Delta^3} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.11. \int \frac{x^2 dx}{(a+bx)(c+fx)} = \frac{x}{bf} + \frac{1}{\Delta} \left[ \frac{c^2}{f^2} \ln |c+fx| - \frac{a^2}{b^2} \ln |a+bx| \right].$$

$$4.12. \int \frac{x^2 dx}{(a+bx)(c+fx)^2} = \\ = \frac{-c^2}{f^2\Delta(c+fx)} + \frac{a^2}{b\Delta^2} \ln |a+bx| + \frac{bc^2-2acf}{f^2\Delta^2} \ln |c+fx|.$$

$$4.13. \int \frac{x^2 dx}{(a+bx)^2(c+fx)^2} = \\ = -\frac{1}{\Delta^2} \left[ \frac{a^2}{b(a+bx)} + \frac{c^2}{f(c+fx)} \right] + \frac{2ab}{\Delta^3} \ln \left| \frac{a+bx}{c+fx} \right|.$$

$$4.14. \int \frac{x^3 dx}{(a+bx)(c+fx)} = \\ = \frac{x^2}{2bf} - \frac{af+bc}{b^2f^2} x + \frac{1}{\Delta} \left[ \frac{a^3}{b^3} \ln |a+bx| - \frac{c^3}{f^3} \ln |c+fx| \right].$$

$$4.15. \int \frac{dx}{x(a+bx)(c+fx)} = \frac{1}{ac} \ln |x| + \frac{b}{a\Delta} \ln |a+bx| - \frac{f}{c\Delta} \ln |c+fx|.$$

$$4.16. \int \frac{dx}{x(a+bx)(c+fx)^2} = \frac{af(af+\Delta)+(af+bc)\Delta}{a^2cf(\Delta-bc)(c+fx)} + \frac{1}{ac^2} \ln |x| + \\ + \frac{b^2c^2-2a^2f^2}{a^2c^2f(\Delta-bc)} \ln |a+bx| + \frac{(af+bc)^2}{a^2c^2f(\Delta-bc)} \ln |c+fx|.$$

$$4.17. \int \frac{dx}{x^2(a+bx)(c+fx)} = \\ = -\frac{1}{acx} - \frac{af+bc}{a^2c^2} \ln |x| - \frac{b^2}{a^2\Delta} \ln |a+bx| + \frac{f^2}{c^2\Delta} \ln |c+fx|.$$