

! For an efficient use of these tables, first read [HowTo.pdf](#).

T1.10. Integrand involving $a + bx$ and $\alpha + \beta x$.

Notation used: $X = a + bx$; $T = \alpha + \beta x$; $\Delta = a\beta = \alpha b$.

1. $\int \frac{dx}{XT} = \frac{1}{\Delta} \ln \frac{T}{X}.$
2. $\int \frac{x dx}{XT} = \frac{1}{\Delta} \left(\frac{a}{b} \ln X - \frac{\alpha}{\beta} \ln T \right).$
3. $\int \frac{dx}{X^2 T} = \frac{1}{\Delta} \left(\frac{1}{X} + \frac{\beta}{\Delta} \ln \frac{T}{X} \right).$
4. $\int \frac{x dx}{X^2 T} = -\frac{a}{b\Delta X} - \frac{\alpha}{\Delta^2} \ln \frac{T}{X}.$
5. $\int \frac{x^2 dx}{X^2 T} = \frac{a^2}{b^2 \Delta X} + \frac{1}{\Delta^2} \left(\frac{\alpha^2}{\beta} \ln T + \frac{a(\Delta - bc)}{b^2} \ln X \right).$
6. $\int \frac{dx}{X^n T^m} = -\frac{1}{(m-1)\Delta} \frac{1}{T^{m-1} X^{n-1}} - \frac{(m+n-2)b}{(m-1)\Delta} \int \frac{dx}{T^{m-1} X^n}$
 $= \frac{1}{(n-1)\Delta} \frac{1}{T^{m-1} X^{n-1}} + \frac{(m+n-2)\beta}{(n-1)\Delta} \int \frac{dx}{T^m X^{n-1}}.$
7. $\int \frac{X}{T} dx = \frac{bx}{\beta} + \frac{\Delta}{\beta^2} \ln T.$
8. $\int \frac{T}{X} dx = \frac{\beta x}{b} - \frac{\Delta}{b^2} \ln X.$
9. $\int \frac{T^m dx}{X^n} = \begin{cases} \frac{1}{(m-n+1)b} \frac{T^m}{X^{n-1}} - \frac{m\Delta}{(m-n+1)b} \int \frac{T^{m-1} dx}{X^n}, \\ \text{or} \\ \frac{1}{(n-1)\Delta} \frac{T^{m+1}}{X^{n-1}} - \frac{(m-n+2)\beta}{(n-1)\Delta} \int \frac{T^m dx}{X^{n-1}}, \\ \text{or} \\ -\frac{1}{(n-1)b} \frac{T^m}{X^{n-1}} + \frac{m\beta}{(n-1)b} \int \frac{T^{m-1}}{X^{n-1}} dx. \end{cases}$

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$$10. \int X^n T^m dx = \frac{X^{n+1} T^m}{(m+n+1)b} - \frac{m\Delta}{(m+n+1)b} \int X^n T^{m-1} dx.$$

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