

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

T2.69C. Integrands involving logarithm functions and powers of logarithm functions and rational functions on the intervals $(0, a)$, $(-a, a)$ and (a, b) .

$$1. \int_0^a \frac{\ln(1+ax)}{1+x^2} dx = \frac{1}{2} \arctan a \ln(1+a^2).$$

$$2. \int_{-a}^a \frac{\ln(1+bx)}{\sqrt{a^2-x^2}} dx = \pi \ln \frac{1+\sqrt{1-a^2b^2}}{2}, \quad 0 \leq |b| \leq \frac{1}{a}.$$

$$3. \int_a^b \ln \frac{b+x}{a+x} \frac{dx}{x} = \frac{1}{2} \left(\ln \frac{b}{a} \right)^2, \quad ab > 0.$$

$$4. \int_a^b \ln \left(\frac{1+cx}{1-cx} \right) \frac{dx}{\sqrt{(x^2-a^2)(b^2-x^2)}} = \frac{\pi}{b} F \left(\arcsin bc, \frac{a}{b} \right), \quad |bc| < 1.$$