

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

T2.65B. Integrands involving logarithm functions and algebraic functions on the intervals $(0, b)$ and (a, b) .

$$1. \int_0^b \frac{\ln x \, dx}{\sqrt{(a^2 + x^2)(b^2 - x^2)}} = \frac{1}{2\sqrt{a^2 + b^2}} \left[\mathbf{K} \left(\frac{b}{\sqrt{a^2 + b^2}} \right) \ln ab - \frac{\pi}{2} \mathbf{K} \left(\frac{a}{\sqrt{a^2 + b^2}} \right) \right],$$

$$a > 0, b > 0.$$

$$2. \int_0^b \frac{\ln x \, dx}{\sqrt{(a^2 - x^2)(b^2 - x^2)}} = \frac{1}{2a} \left[\mathbf{K} \left(\frac{b}{a} \right) \ln ab - \frac{\pi}{2} \mathbf{K} \left(\frac{\sqrt{a^2 - b^2}}{a} \right) \right], \quad a > b > 0.$$

$$3. \int_a^b \frac{\ln x \, dx}{\sqrt{(x^2 - a^2)(b^2 - x^2)}} = \frac{1}{2b} \mathbf{K} \left(\frac{\sqrt{b^2 - a^2}}{b} \right) \ln ab.$$