

FORMULA 4.292.4

$$\int_0^1 \frac{x \ln(1+ax)}{\sqrt{1-x^2}} dx = \begin{cases} -1 + \frac{\pi}{2} \cdot \frac{1-\sqrt{1-a^2}}{a} + \frac{\sqrt{1-a^2}}{a} \arcsin a & |a| \leq 1 \\ -1 + \frac{\pi}{2a} + \frac{\sqrt{a^2-1}}{a} \ln(a + \sqrt{a^2-1}) & a \geq 1 \end{cases}$$