

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

T2.78A. Integrands involving trigonometric and inverse trigonometric functions on the interval $(0, \pi/2)$.

$$1. \int_0^{\pi/2} \arcsin(k \sin x) \frac{\sin x \, dx}{\sqrt{1 - k^2 \sin^2 x}} = -\frac{\pi}{2k} \ln k'.$$

$$\begin{aligned} 2. \int_0^{\pi/2} \arctan \left(\tan \lambda \sqrt{1 - k^2 \sin^2 x} \right) \frac{\sin^2 x \, dx}{\sqrt{1 - k^2 \sin^2 x}} \\ = \frac{\pi}{2k^2} \left[F(\lambda, k) - E(\lambda, k) + \cot \lambda \left(1 - \sqrt{1 - k^2 \sin^2 \lambda} \right) \right]. \end{aligned}$$

$$\begin{aligned} 3. \int_0^{\pi/2} \arctan \left(\tan \lambda \sqrt{1 - k^2 \sin^2 x} \right) \frac{\cos^2 x \, dx}{\sqrt{1 - k^2 \sin^2 x}} \\ = \frac{\pi}{2k^2} \left[E(\lambda, k) - k'^2 F(\lambda, k) + \cot \lambda \left(1 - \sqrt{1 - k^2 \sin^2 \lambda} \right) - 1 \right]. \end{aligned}$$
