

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

T2.41A. Integrands involving sine and cosine of single and multiple arguments on the interval $(0, \pi/2)$.

$$1. \int_0^{\pi/2} \frac{\sin(2n-1)x}{\sin x} dx = \frac{\pi}{2}.$$

$$2. \int_0^{\pi/2} \frac{\sin 2nx}{\sin x} dx = 2 \left(1 - \frac{1}{3} + \frac{1}{5} - \cdots + \frac{(-1)^{k-1}}{2n-1} \right).$$

$$3. \int_0^{\pi/2} \frac{\cos 2nx dx}{1 - a^2 \sin^2 x} = \frac{(-1)^n \pi}{2\sqrt{1-a^2}} \left(\frac{1 - \sqrt{1-a^2}}{a} \right)^{2n}, \quad a^2 < 1.$$

$$4. \int_0^{\pi/2} \frac{\cos 2nx dx}{(a^2 \cos^2 x + b^2 \sin^2 x)^{n+1}} = \binom{2n}{n} \frac{(b^2 - a^2)^n}{(2ab)^{2n+1}} \pi, \quad a > 0, b > 0.$$

$$5. \int_0^{\pi/2} \frac{\sin 2nx \cos^{2m+1} x}{\sin x} dx = \frac{\pi}{2}, \quad n > m \geq 0.$$
