! For an efficient use of these tables, first read `HowTo.pdf`.

T2.32A. Integrands involving exponentials of trigonometric functions and $\ln x$ on the intervals $(0, \pi/2)$, $(0, \pi)$, $(-\pi/2, \pi/2)$, and $(0, 1)$.

1. $\displaystyle\int_0^{\pi/2} \exp(-p \tan x)\, dx = \operatorname{Ci}(p) \sin p - \operatorname{Si}(p) \cos(p), \quad p > 0.$

2. $\displaystyle\int_0^{\pi} \{\exp i\,[(\nu-1)x - \beta \sin x] - \exp i\,[(\nu+1)x - \beta \sin x]\}\, dx = 2\pi\,[\mathbf{J}'_\nu(\beta) + i\,\mathbf{E}'_\nu(\beta)],$

   $\Re\{\beta\} > 0.$

3. $\displaystyle\int_0^{\pi} \exp[\pm i\,(\nu x - \beta \sin x)]\, dx = \pi\,[\mathbf{J}_\nu(\beta) \pm i\,\mathbf{E}_\nu(\beta)], \quad \Re\{\beta\} > 0.$

$$\int_0^{\pi} \exp(z \cos x)\, dx = \pi I_0(z).$$

4. $\displaystyle\int_{-\pi}^{\pi} \frac{1}{1 + p \sin x + q \cos x} \exp\left[\frac{a + b \sin x + c \cos x}{1 + p \sin x + q \cos x}\right] dx = \frac{2\pi}{\sqrt{1 - p^2 - q^2}}\, e^{-\alpha} I_0(\beta),$

   where $\displaystyle\alpha = \frac{bp + cq - a}{1 - p^2 - q^2};\ \beta = \sqrt{\alpha^2 - \frac{a^2 - b^2 - c^2}{1 - p^2 - q^2}};,\ p^2 + q^2 < 1.$

5. $\displaystyle\int_0^1 x^{-px}\, dx = \frac{1 - e^{-p}}{p}.$

6. $\displaystyle\int_0^1 \exp(-p\, x\, \ln x)\, dx = \sum_{k=1}^{\infty} \frac{p^{k-1} - 1}{k^k}.$
