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

T2.53A. Integrands involving rational functions of $(a+b\,x)$ and trigonometric functions on the interval $(0,\pi/4)$.

1. $\displaystyle\int_0^{\pi/4}\frac{\cos x-\sin x}{\cos x+\sin x}x\,dx=\frac{\pi}{4}\,\ln\,2-\frac{1}{2}\mathbf{G}.$

2. $\displaystyle\int_0^{\pi/4}\Big(\frac{\pi}{4}-x\,\tan x\Big)\,\tan x\,dx=\frac{1}{2}\,\ln\,2+\frac{\pi^2}{32}-\frac{\pi}{4}+\frac{\pi}{8}\,\ln\,2.$

3. $\displaystyle\int_0^{\pi/4}\frac{\left(\frac{\pi}{4}-x\right)\,\tan x\,dx}{\cos 2x}=-\frac{\pi}{8}\,\ln\,2+\frac{1}{2}\mathbf{G}.$

4. $\displaystyle\int_0^{\pi/4}\frac{\frac{\pi}{4}-x\,\tan x}{\cos 2x}\,dx=\frac{\pi}{8}\,\ln\,2+\frac{1}{2}\mathbf{G}.$

5. $\displaystyle\int_0^{\pi/4}\frac{x\,dx}{(\cos x+a\,\sin x)^2}=\frac{1}{1+a^2}\,\ln\frac{1+a}{\sqrt{2}}+\frac{\pi}{4}\cdot\frac{1-a}{(1+a)(1+a^2)},\quad a>0.$

6. $\displaystyle\int_0^{\pi/4}\frac{x\,dx}{(\cos x+\sin x)\,\sin x}=-\frac{\pi}{8}\,\ln\,2+\mathbf{G}.$

7. $\displaystyle\int_0^{\pi/4}\frac{x\,dx}{(\cos x+\sin x)\,\cos x}=\frac{\pi}{8}\,\ln\,2.$

8. $\displaystyle\int_0^{\pi/4}\frac{\sin x}{\sin x+\cos x}\,\frac{x\,dx}{\cos^2 x}=-\frac{\pi}{8}\,\ln\,2+\frac{\pi}{4}-\frac{1}{2}\,\ln\,2.$

9. $\displaystyle\int_0^{\pi/4}\frac{x\,\tan x\,dx}{(\sin x+\cos x)\,\cos x}=-\frac{\pi}{8}\,\ln\,2+\frac{\pi}{4}-\frac{1}{2}\,\ln\,2.$