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

T2.46A. Integrands involving square roots of expressions containing trigonometric functions on the interval $(0, \pi/4)$.

1. $$\int_0^{\pi/4} \frac{\sin^n x}{\cos^{n+1} x} \frac{dx}{\sqrt{\cos x(\cos x - \sin x)}} = \frac{2\,(2n)!!}{(2n+1)!!}.$$

2. $$\int_0^{\pi/4} \frac{\sin^n x}{\cos^{n+1} x} \frac{dx}{\sqrt{\sin x(\cos x - \sin x)}} = \frac{(2n-1)!!}{(2n)!!}\,\pi.$$

3. $$\int_0^{\pi/4} (\sec^{1/2} 2x - 1)\,\frac{dx}{\tan x} = \ln 2.$$

4. $$\int_0^{\pi/4} \frac{\tan^2 x\,dx}{\sqrt{1 - k^2 \sin^2 2x}} = \sqrt{1-k^2} - \mathbf{E}(k) + \tfrac{1}{2}\,\mathbf{K}(k).$$

5. $$\int_0^{\pi/4} \frac{(\cos x - \sin x)^{n-1/2}}{\cos^{n+1} x} \sqrt{\csc x}\,dx = \frac{(2n-1)!!}{(2n)!!}\,\pi.$$

6. $$\int_0^{\pi/4} \frac{(\cos x - \sin x)^{n-1/2}}{\cos^{n+1} x} \tan^m x \sqrt{\csc x}\,dx = \frac{(2n-1)!!(2m-1)!!}{(2n+2m)!!}\,\pi.$$
