

7/12 解析入門

例: $\tan(\alpha+\beta)$ の加法定理 (作41).

$$\tan(\alpha+\beta) = \frac{\sin(\alpha+\beta)}{\cos(\alpha+\beta)} = \frac{\sin\alpha\cos\beta + \cos\alpha\sin\beta}{\cos\alpha\cos\beta - \sin\alpha\sin\beta}$$

分母, 分子に $\frac{1}{\cos\alpha\cos\beta}$ をかける,

$$= \frac{\frac{\sin\alpha}{\cos\alpha} + \frac{\sin\beta}{\cos\beta}}{1 - \frac{\sin\alpha}{\cos\alpha} \cdot \frac{\sin\beta}{\cos\beta}} = \frac{\tan\alpha + \tan\beta}{1 - \tan\alpha\tan\beta}$$

例: (1) $\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)$ を求めよ.

$$y = \cos^{-1}\left(-\frac{1}{\sqrt{2}}\right) \quad \text{rad} < z \quad \begin{cases} -\frac{1}{\sqrt{2}} = \cos y \\ 0 \leq y \leq \pi \end{cases} \quad \therefore y = \frac{3}{4}\pi$$

(2) $\tan^{-1}\sqrt{3}$ を求めよ.

$$y = \tan^{-1}\sqrt{3} \quad \text{rad} < z, \quad \begin{cases} \sqrt{3} = \tan y \\ -\frac{\pi}{2} < y < \frac{\pi}{2} \end{cases} \quad \therefore y = \frac{\pi}{3}$$