



Und damit

$$\begin{aligned}\sin(\alpha - \beta) &= \sin(\alpha) \cos(\beta) - \cos(\alpha) \sin(\beta) \\ \cos(\alpha - \beta) &= \cos(\alpha) \cos(\beta) + \sin(\alpha) \sin(\beta)\end{aligned}$$

✳ **Lösung zu Aufgabe 436** ex-additionstheorem-tangens

$$\begin{aligned}\tan(\alpha + \beta) &= \frac{\sin(\alpha + \beta)}{\cos(\alpha + \beta)} = \frac{\sin(\alpha) \cos(\beta) + \cos(\alpha) \sin(\beta)}{\cos(\alpha) \cos(\beta) - \sin(\alpha) \sin(\beta)} = \\ &= \frac{\sin(\alpha) \cos(\beta) + \cos(\alpha) \sin(\beta)}{\cos(\alpha) \cos(\beta) - \sin(\alpha) \sin(\beta)} \cdot \frac{\frac{1}{\cos(\alpha) \cos(\beta)}}{\frac{1}{\cos(\alpha) \cos(\beta)}} = \frac{\frac{\sin(\alpha)}{\cos(\alpha)} + \frac{\sin(\beta)}{\cos(\beta)}}{1 + \frac{\sin(\alpha)}{\cos(\alpha)} \cdot \frac{\sin(\beta)}{\cos(\beta)}} = \frac{\tan(\alpha) + \tan(\beta)}{1 + \tan(\alpha) \tan(\beta)}\end{aligned}$$