

2.61
75

$$\frac{1 + \tan 2x - \cos x - \tan 2x}{1 - \cos 4x + \cos x + \cos 4x} = \frac{1 - \cos x}{1 + \cos x} \quad (*)$$

$$\tan x = \frac{2 \tan \frac{x}{2}}{1 - \tan^2 \frac{x}{2}} \rightarrow \sqrt{\frac{1}{3}} = \frac{2 \tan \frac{x}{2}}{1 - \tan^2 \frac{x}{2}} \rightarrow \sqrt{2} \tan \frac{x}{2} + 2 \tan \frac{x}{2} - \sqrt{2} = 0$$
$$\tan \frac{x}{2} = -\frac{\sqrt{2}}{2} \rightarrow \text{Wurde nicht benötigt}$$

$$\cos x = \frac{1 - \tan^2 \frac{x}{2}}{1 + \tan^2 \frac{x}{2}} = \frac{1 - \frac{1}{3}}{1 + \frac{1}{3}} = \frac{1}{3}$$

$$\boxed{\tan \frac{x}{2} = \frac{1}{\sqrt{2}}}$$

$$(*) \quad \frac{1 - \frac{1}{3}}{1 + \frac{1}{3}} = \frac{\frac{2}{3}}{\frac{4}{3}} = \boxed{\frac{1}{2}}$$