

use $\cos 2x = \cos^2 x - \sin^2 x$

$$\cos 2x = \cos^2 x - \sin^2 x$$

$$\cos 2x - \cos 2x = -2 (\sin^2 x - \sin^2 x)$$

$$\frac{\cos 2x - \cos 2x}{\sin x - \sin x} = \frac{-2 \sin^2 x - \sin^2 x}{\sin x - \sin x} \rightarrow a^2 - b^2 = (a+b)(a-b)$$

$$= -2 (\sin x + \sin x)$$

$$\begin{aligned} & -2 \int \sin x \, dx - 2 \sin x \int dx + C \\ & = 2 \cos x - 2x \sin x + C \end{aligned}$$