

Solution to n)

$$\begin{aligned}\frac{\sin x + 1 - \cos x}{\sin x - 1 + \cos x} &= \frac{\sin x + 1 - \cos x}{\sin x - 1 + \cos x} \cdot \frac{(\sin x + 1 + \cos x)}{\sin x + 1 + \cos x} \\ &= \frac{(\sin x + 1)^2 - \cos^2 x}{(\sin x + \cos x)^2 - 1} \\ &= \frac{\sin^2 x - \cos^2 x + 2\sin x + 1}{2\sin x \cos x} \\ &= \frac{\sin^2 x - 1 + \sin^2 x + 2\sin x + 1}{2\sin x \cos x} \\ &= \frac{2\sin x (\sin x + 1)}{2\sin x \cos x} \\ &= \frac{\sin x + 1}{\cos x}\end{aligned}$$

Solution to o)

$$\begin{aligned}\tan x + \sec x &= \frac{\tan x + \sec x - 1}{\tan x - \sec x + 1} = \frac{\frac{\sin x}{\cos x} + \frac{1}{\cos x} - 1}{\frac{\sin x}{\cos x} - \frac{1}{\cos x} + 1} \\ &= \frac{\sin x - \cos x + 1}{\sin x + \cos x - 1} \quad (\text{do same as in n}) \\ &= \frac{\sin x + 1}{\cos x} \\ &= \frac{\sin x}{\cos x} + \frac{1}{\cos x} \\ &= \tan x + \sec x\end{aligned}$$