$$tg^2\left(\frac{\alpha}{2}\right) + \frac{1}{\cos^2\left(\frac{\alpha}{2}\right)} + \frac{\cos\alpha - \cos^2\alpha}{\sin^2\alpha} = \dots$$

$$\frac{1-\cos\alpha}{1+\cos\alpha} + \frac{1}{\frac{1+\cos(\alpha)}{2}} + \frac{\cos\alpha(1-\cos\alpha)}{1-\cos^2\alpha} = \dots$$

C.E.

$(1-\cos\alpha) \neq 0$

$(1+\cos\alpha) \neq 0$

$$\frac{1-\cos\alpha}{1+\cos\alpha} + \frac{2}{1+\cos\alpha} + \frac{\cos\alpha\cancel{(1-\cos\alpha)}}{\cancel{(1-\cos\alpha)}(1+\cos\alpha)} = \dots$$

$$\frac{1-\cos\alpha}{1+\cos\alpha} + \frac{2}{1+\cos\alpha} + \frac{\cos\alpha}{1+\cos\alpha} = \dots$$

$$\frac{1-\cancel{\cos\alpha}+2+\cancel{\cos\alpha}}{1+\cos\alpha} = \dots$$

$$\frac{3}{1+\cos\alpha} = \dots \rightarrow \frac{3}{1+\cos\alpha}$$