

$$\begin{aligned}\cos(\omega t - kx) + a \cos(\omega t - kx - \phi) &= (1 + a \cos \phi) \cos(\omega t - kx) + a \sin \phi \sin(\omega t - kx) \\ &= A \cos(\omega t - kx - \phi')\end{aligned}$$

$$A = \sqrt{1 + 2a \cos \phi + a^2}, \quad \phi' = \tan^{-1} \left(\frac{a \sin \phi}{1 + a \cos \phi} \right)$$

