

eqⁿ (31) is a general expression for finding Z_{in} (36) at any point on the line. To find Z_{in} at distance l' from the load \rightarrow we replace l by l' .

for a lossless line, $\gamma = j\beta$, $\tanh j\beta l = j \tan \beta l$
and $Z_0 = R_0$ so eqⁿ (31) becomes

$$Z_{in} = Z_0 \left[\frac{Z_L + j Z_0 \tan \beta l}{Z_0 + j Z_L \tan \beta l} \right] \text{ (lossless)}$$

input impedances vary periodically with distance l from the load. The quantity βl in (32) is referred to as the "electrical length" of the line and can be expressed in "degrees" or "radians".