Similar to equations (2.40a) & (2.40b), determine equations for I_{max} & I_{min} and the corresponding reflection coefficient conditions for each. Note that I_{max} & I_{min} pair up with V_{max} & V_{min} at corresponding locations, which goes with which?

Per (2.36b), $I(z) = \frac{V_0^+}{Z_0}\left[e^{-j\beta z} - \Gamma e^{j\beta z}\right]$ let $z = -\ell$

$$|I(z)| = \frac{|V_0^+|}{Z_0} \underbrace{|e^{+j\beta\ell}|}_{\to 1} \, |1 - \underbrace{\Gamma}_{\to |\Gamma| e^{j\theta}} e^{-j2\beta\ell}| = \frac{|V_0^+|}{Z_0} \left|1 - |\Gamma| e^{j(\theta - 2\beta\ell)}\right|$$

To minimize the right hand term, let

$e^{j(\theta-2\beta\ell)} = 1$, which gives

$$\underline{\underline{I_{min} = \text{Min}|I(z)| = \frac{|V_0^+|}{Z_0}\left(1 - |\Gamma|\right) = |I_0^+|\left(1 - |\Gamma|\right)}}$$

⇒ Note, this would put I_{min} at the same location as V_{max}!

To maximize the right hand term, let

$e^{j(\theta-2\beta\ell)} = -1$, which gives

$$\underline{\underline{I_{max} = \text{Max}|I(z)| = \frac{|V_0^+|}{Z_0}\left(1 + |\Gamma|\right) = |I_0^+|\left(1 + |\Gamma|\right)}}$$

⇒ Note, this puts I_{max} at the same location as V_{min}!