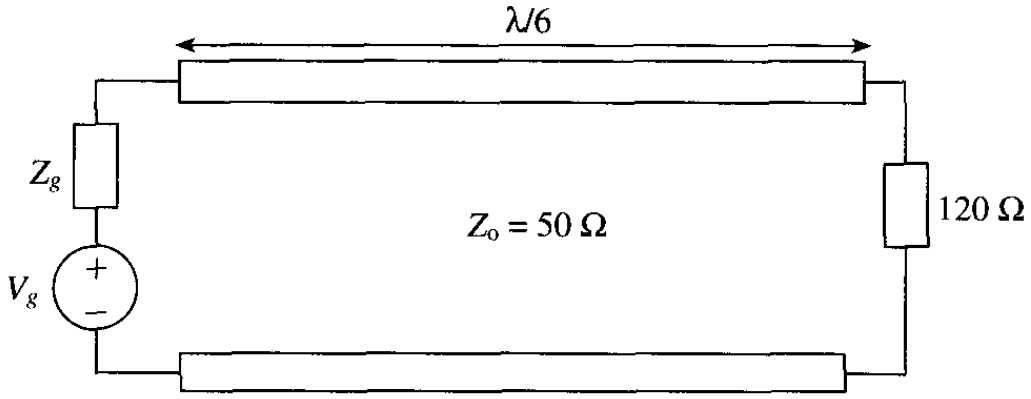
11.28 Refer to the lossless transmission line shown. (a) Find Γ and s. (b) Determine Z_{in} at the generator.



- Find reflection coefficient at both load and input.

Plot $z_L = \frac{Z_L}{Z_o} = \frac{120}{50} = 2.4$ on Smith Chart

a) Read off $|\Gamma_L| = 0.41$ $\quad \measuredangle \Gamma_L = 0°$

$$s = 2.4 = r_{max}$$

$$\Gamma_L = 0.41 \angle 0°$$

b) Move $\lambda/6$ "toward the generator" from z_L on an arc of constant radius to Γ_{in} & z_{in} point

$z_{in} = 0.525 - j\,0.45$ Ω $\Rightarrow Z_{in} = z_{in} Z_o$

$$Z_{in} = 26.25 - j\,22.5\ \Omega$$

$|\Gamma_{in}| = 0.41$ $\quad \measuredangle \Gamma_{in} = -120°$

$$\Gamma_{in} = 0.41 \angle -120°$$

Simple Smith Chart

$Z_0 = 50\Omega$