For problem 2.29, plot $|V|$, $|I|$, and P for $-l/\lambda \le z \le 0$.

2.29 A 50 Ω transmission line is matched to a 10 V source and feeds a load $Z_L = 100\ \Omega$. If the line is 2.3λ long and has an attenuation constant $\alpha = 0.5$ dB/λ, find the powers that are delivered by the source, lost in the line, and delivered to the load.

From 2.29, we know: $Z0 = 50\ \Omega$ $l\lambda = 2.3$ wavelengths $\Gamma L = 0.33333$

$\gamma\lambda = 0.05756 + 6.28319i$ propagation constant per wavelength

$|V0p| = 4.37996$ V $\arg(V0p)\cdot\frac{180}{\pi} = -108$ deg

$n := 0..1000$ $z\lambda_n := \frac{n}{1000}\cdot -l\lambda$ $V_n := V0p\cdot\left(e^{-\gamma\lambda\cdot z\lambda_n} + \Gamma L\cdot e^{\gamma\lambda\cdot z\lambda_n}\right)$

$I_n := \frac{V0p}{Z0}\cdot\left(e^{-\gamma\lambda\cdot z\lambda_n} - \Gamma L\cdot e^{\gamma\lambda\cdot z\lambda_n}\right)$ $P_n := 0.5\cdot Re\left(V_n\cdot\overline{I_n}\right)$