

Special Problem 2.E-2

Consider a three port device with the scattering matrix:

$$\mathbf{S} = \begin{bmatrix} 0 & 0.5 & 0.4 \\ 0.5 & 0 & 0.3 \\ 0.4 & 0.3 & 0 \end{bmatrix}$$

Say that ports **1** and **3** of the device are **terminated** in matched loads, and there is a wave **incident** on port **2**.

The voltage at port **3** is:

$$V_3 (z_3 = 0) = 0.6 V$$

Determine the voltage at port **1** (i.e., $V_1 (z_1 = 0)$).