

**Special Problem 2.E-1**

Consider a three port device with the scattering matrix:

$$\mathbf{S} = \begin{bmatrix} 0 & 0.2 & -0.5 \\ 0.2 & 0 & j0.4 \\ -0.5 & j0.4 & 0 \end{bmatrix}$$

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

The matched load at **port 1** is absorbing energy at a rate of **25 mW**.

Determine the **power** exiting **port 2**