

EE 4474/5574

Homework Problem #11

The following measurements pertain to a two-port circuit operating in the sinusoidal steady state.

With port 2 open, a voltage equal to $150\cos 4000t$ V is applied to port 1. The current into port 1 is $25\cos(4000t - 45^\circ)$ A, and the port 2 voltage is $100\cos(4000t + 15^\circ)$ V.

With port 2 short-circuited, a voltage equal to $30\cos 4000t$ V is applied to port 1. The current into port 1 is $1.5\cos(4000t + 30^\circ)$ A, and the current into port 2 is $0.25\cos(4000t + 150^\circ)$ A.

Find the *transmission parameters* that can be used to describe the sinusoidal steady-state behavior of this circuit. Express your results in polar form, using the cosine function as the basis.