Duke University
Department of Physics

Physics 271 Spring Term 2017

HOMEWORK 5

Available: February 9
Due: February 16, at the beginning of class.

Reading: Eggleston 2.6-2.9

Problem 1: Write the transfer function $\hat{H}(j\omega)$ for the circuit shown in Eggleston Fig 2.36, and make the Bode plot ($|\hat{H}(\omega)|$ vs ω in log-log). Plot also phase shift as a function of ω.

Problem 2: Show that average power in an AC circuit can be written $P_{\text{avg}} = \frac{1}{2}\Re\,(\hat{V}^*\hat{I}) = \frac{1}{2}\Re(\hat{V}\hat{I}^*)$.

Text Problems:
Eggleston 2.10, 2.13-2.17