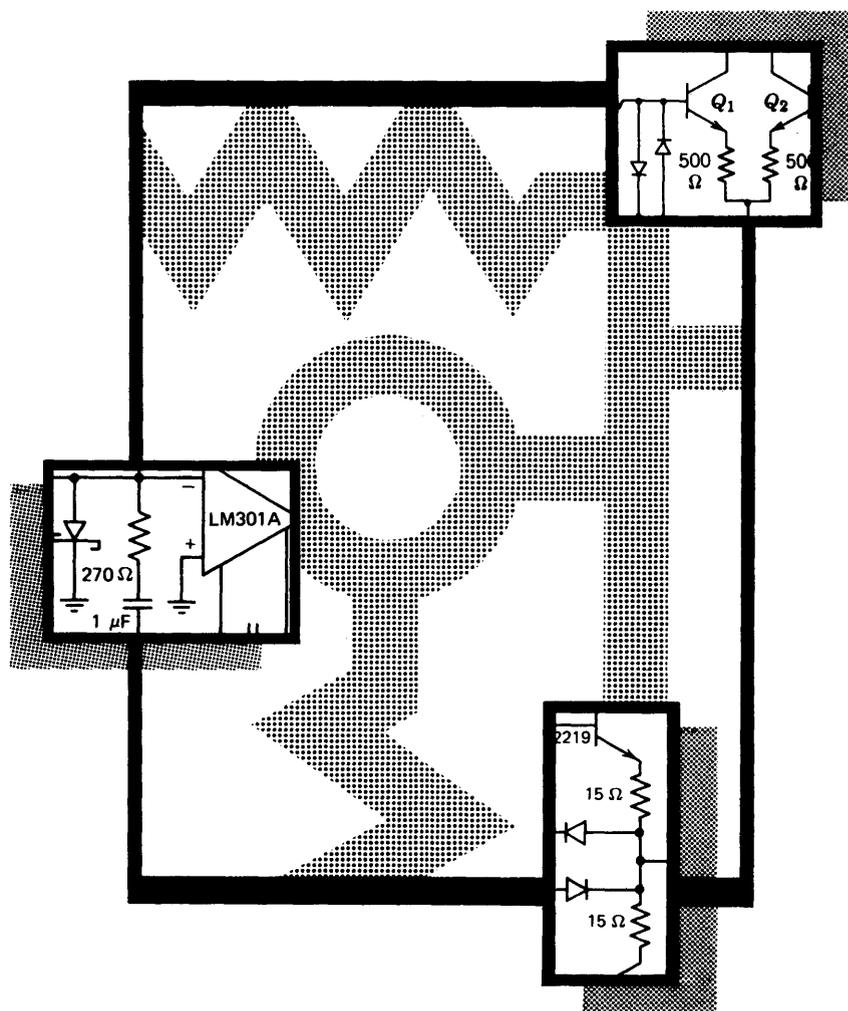# Describing Functions

(continued)
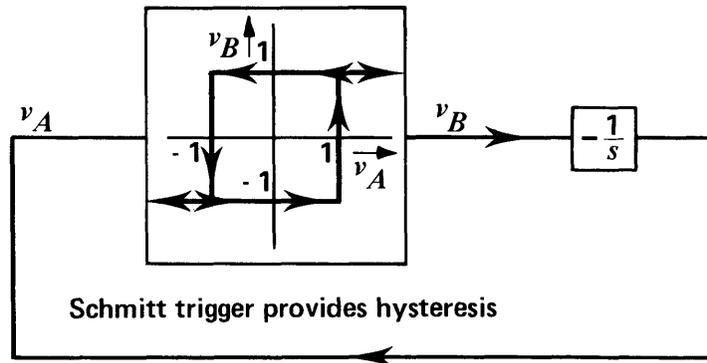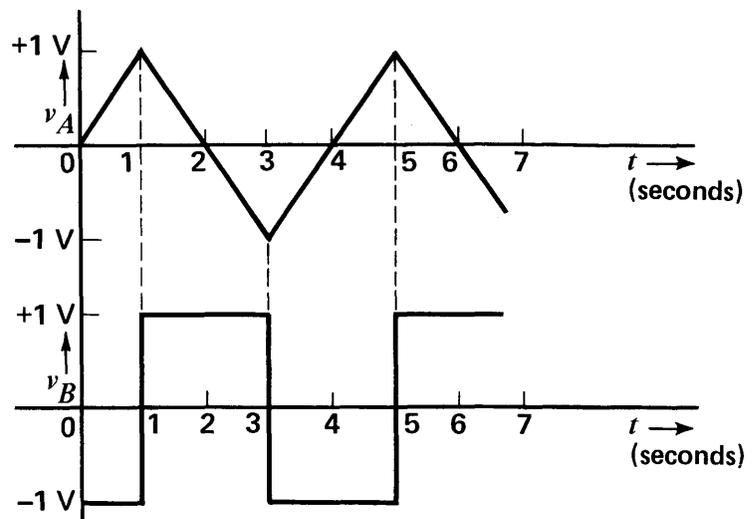
16

Blackboard 16.1
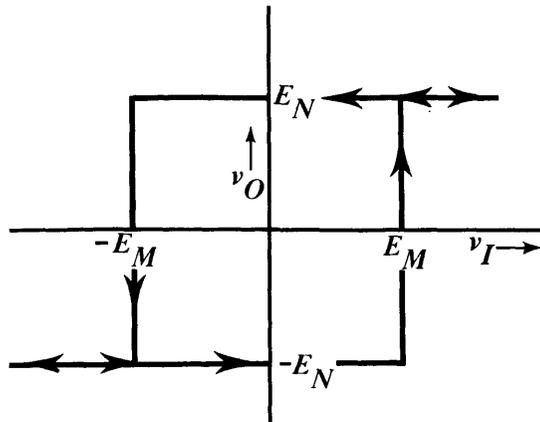

Viewgraph 16.1

Schmitt trigger provides hysteresis
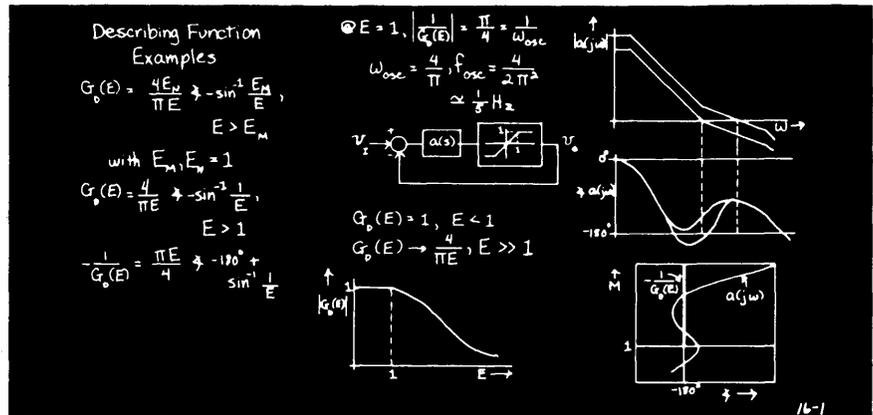
Viewgraph 16.2

Transfer characteristics.

Input and output waveforms
for sinusoidal excitation.

$$v_I = E \sin \omega t$$

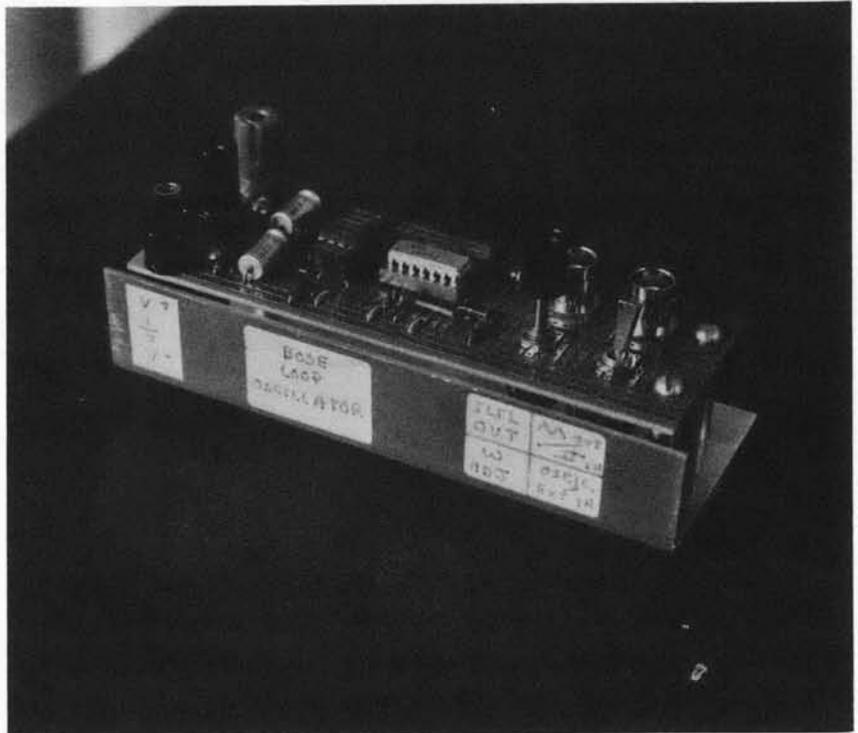$$\alpha = \sin^{-1} \frac{E_M}{E}$$
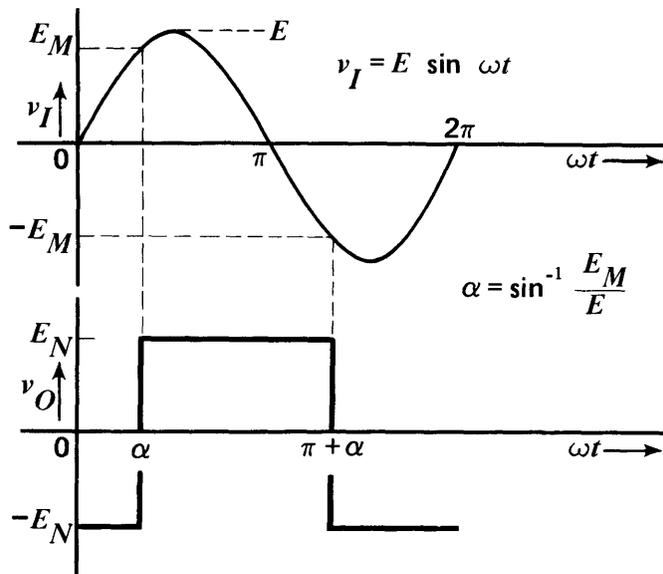
Viewgraph 16.4
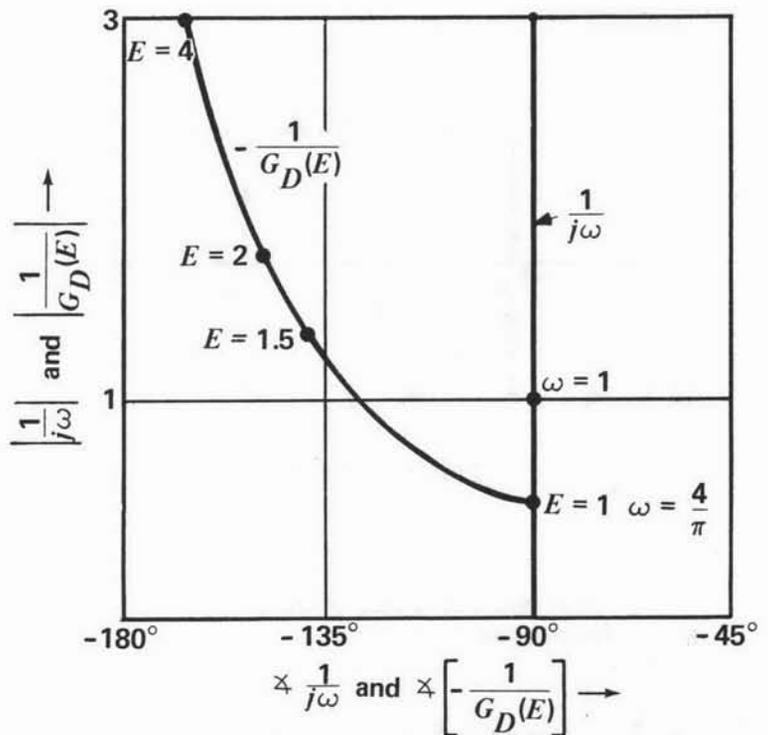
Describing-function analysis of the function generator.

**Demonstration Photograph
16.1** Function generator

This lecture continues examples of describing-function analysis. **Comments**
The method is used to predict the operation of an oscillator formed
by combining an integrator with a Schmitt trigger. Reasonable
agreement with the exact solution is obtained even though the con-
ditions assumed for describing-function analysis are not particu-
larly well satisfied by this system.

We also see an example of a system where relative stability is
a function of signal levels.

Material covered in connection with Lecture 15 provides the nec- **Reading**
essary background for this lecture.

Problem

Problem 16.1 (P6.8)

RES.6-010 Electronic Feedback Systems
Spring 2013