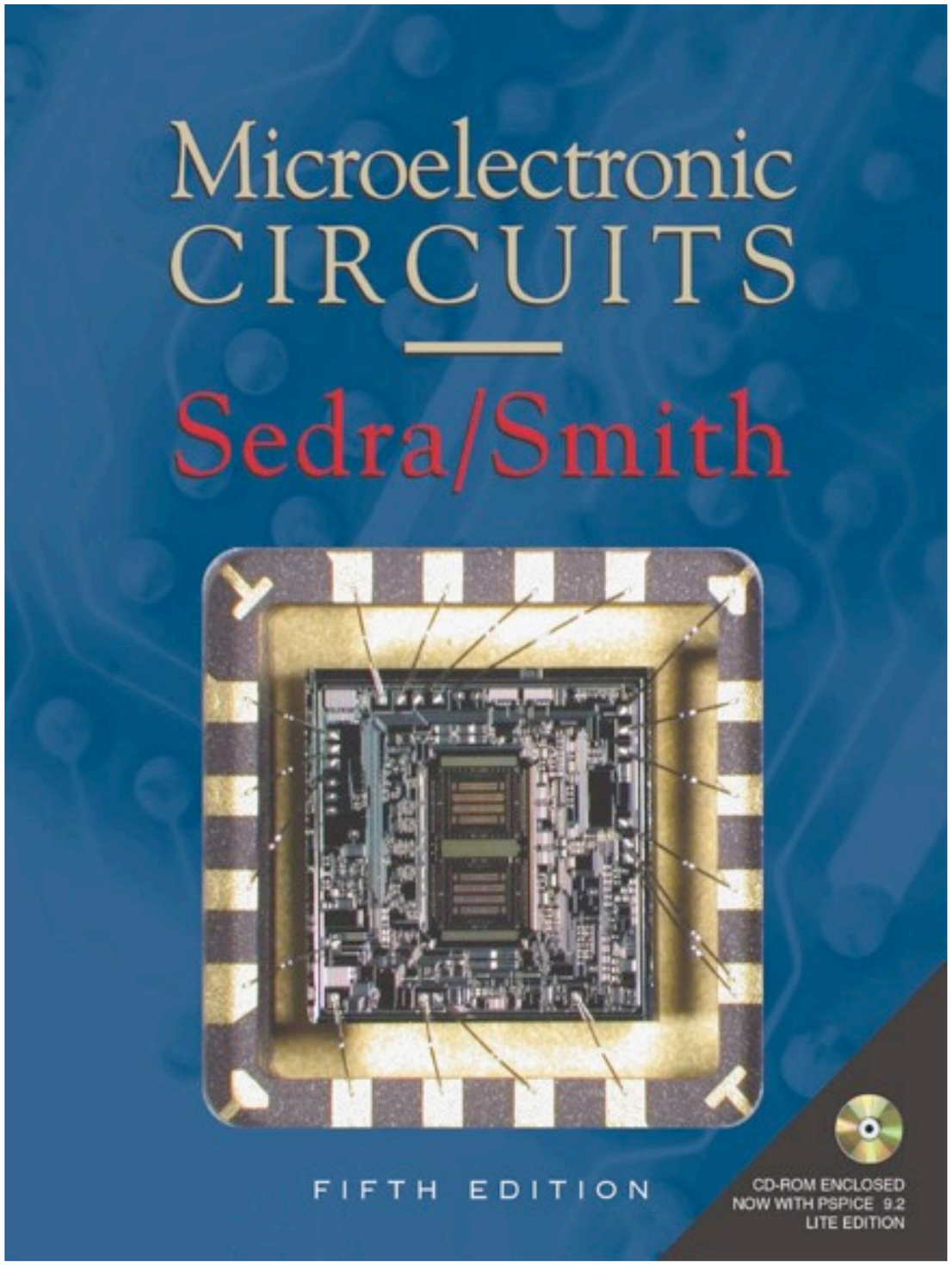
INEL4202 Electrónica II

Introducción al Curso

- Libro de Texto: Sedra, Adel S.; Smith, Kenneth C.; *Microelectronic Circuits, 5th Edition*, Oxford University Press, New York, 2004.
- Tres examenes parciales y un examen final
- Fechas: Lunes 10 de sept., Martes 9 de octubre y miercoles 21 de noviembre; de 8pm a 10pm.
- De necesitar acomodo razonable, favor de consultar al profesor durante la primera semana del semestre. para obtener acomodo razonable debe dirigirse a la Oficina de Calidad de Vida, a la extensi´on 5467, 3107 y 3894 o visitar el Decanato de Estudiantes, Primer Piso, Oficina de Calidad de Vida.



Textbook

Sedra/Smith
Microelectronic Circuits 5/e

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- Página del curso: http://ece.uprm.edu/~mtoledo/4202

- Temas
  - Ex. 1: Respuesta de frecuencia
  - Ex. 2: Retro-alimentación, estabilidad y osciladores
  - Ex. 3: Opamps
  - Amplificadores de potencia

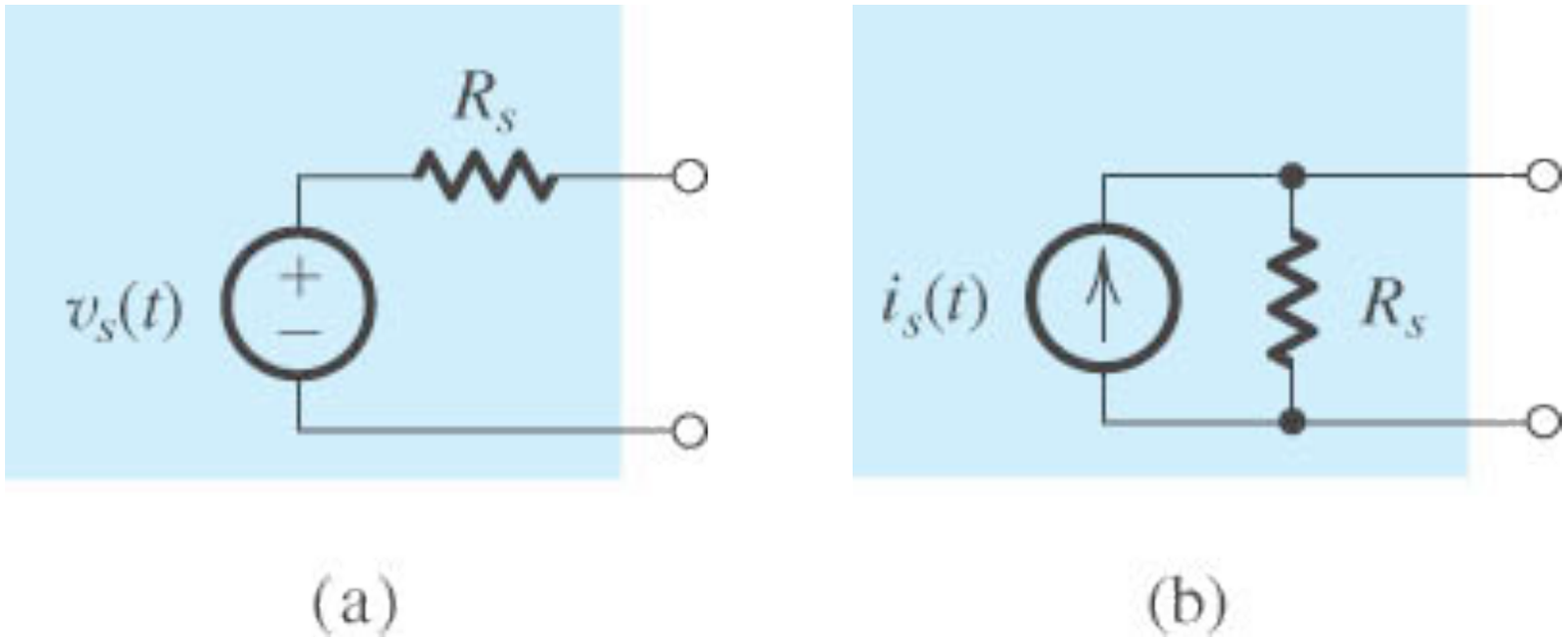


Figure 1.1 Two alternative representations of a signal source: **(a)** the Thévenin form, and **(b)** the Norton form.

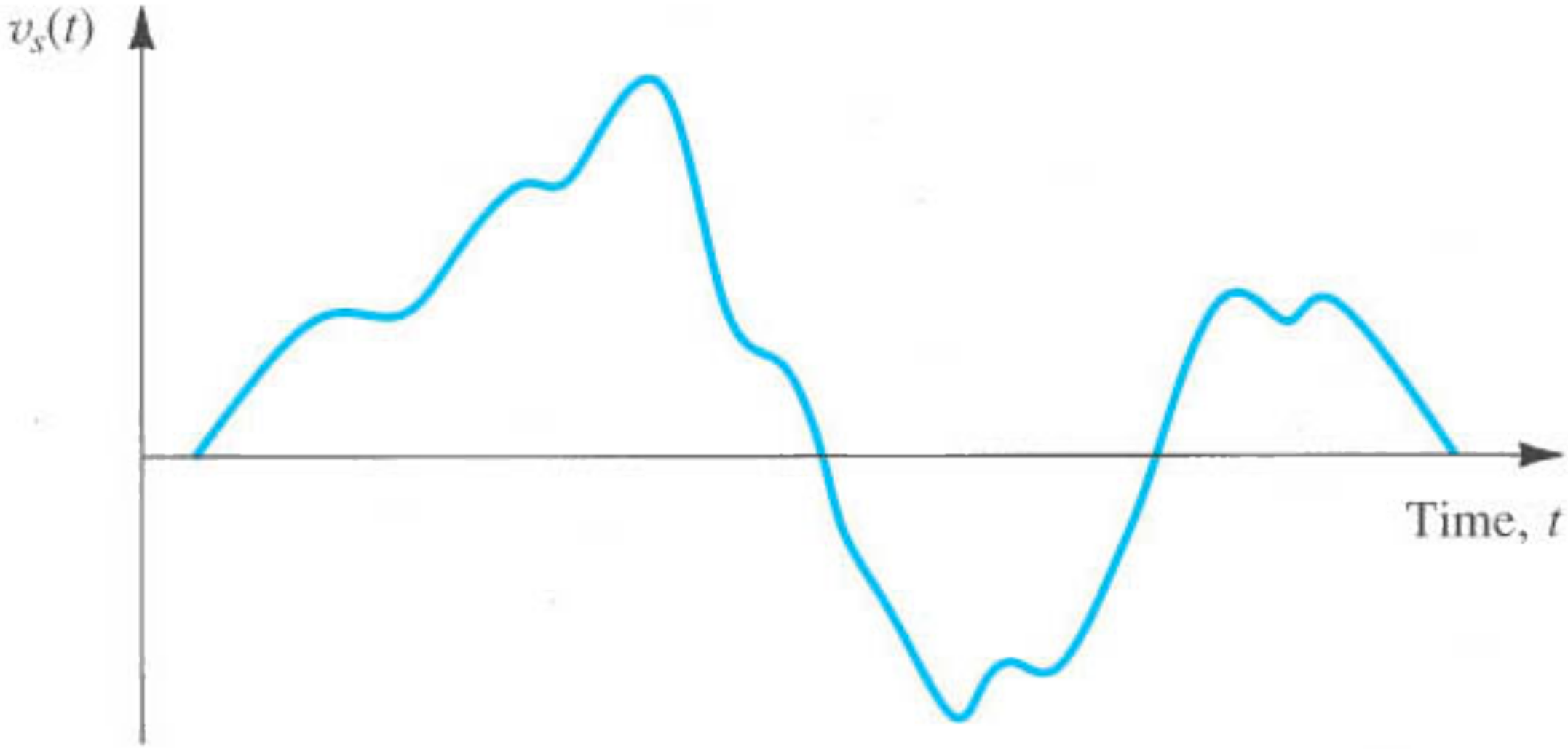


Figure 1.2 An arbitrary voltage signal $v_s(t)$.

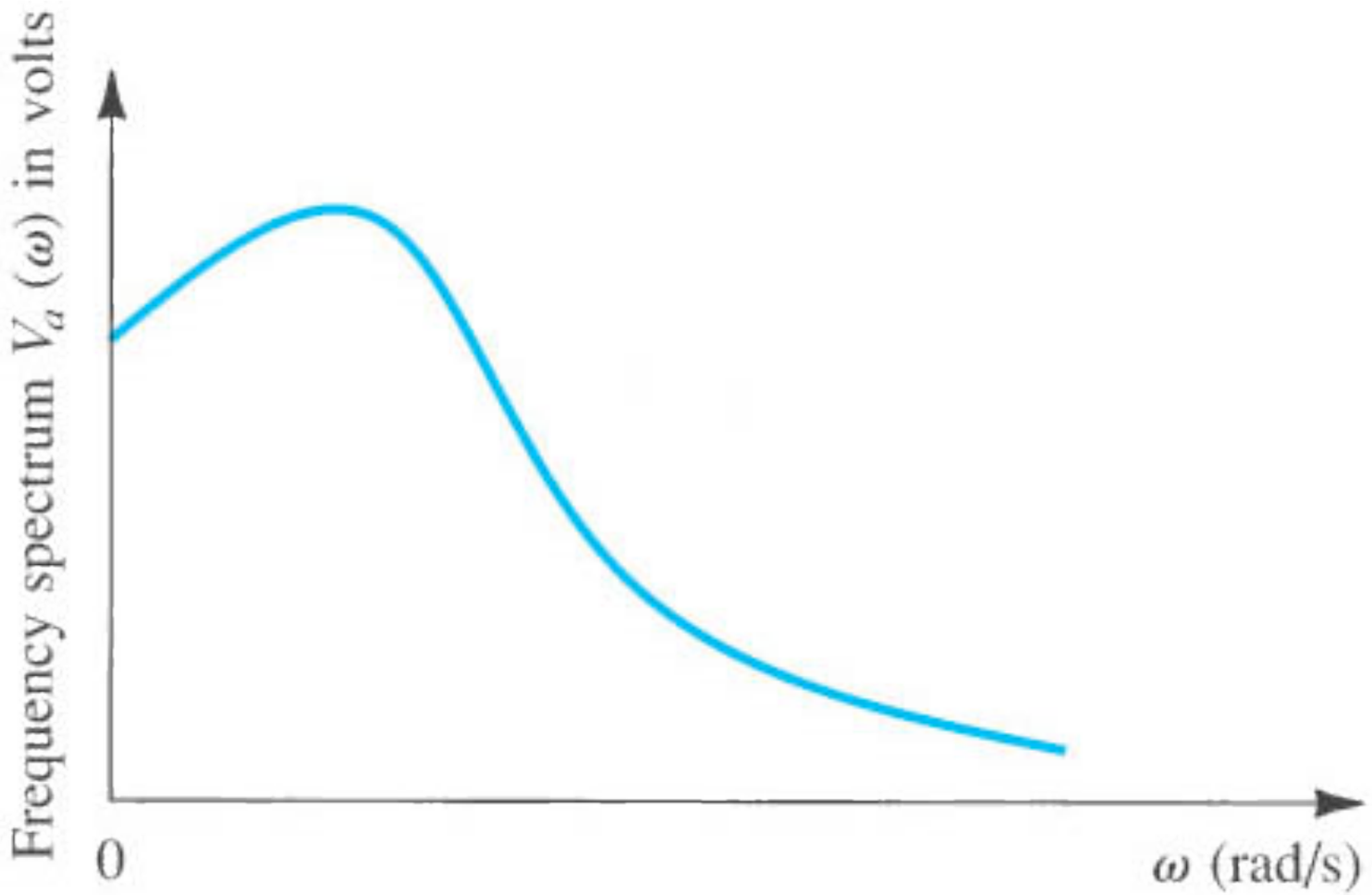
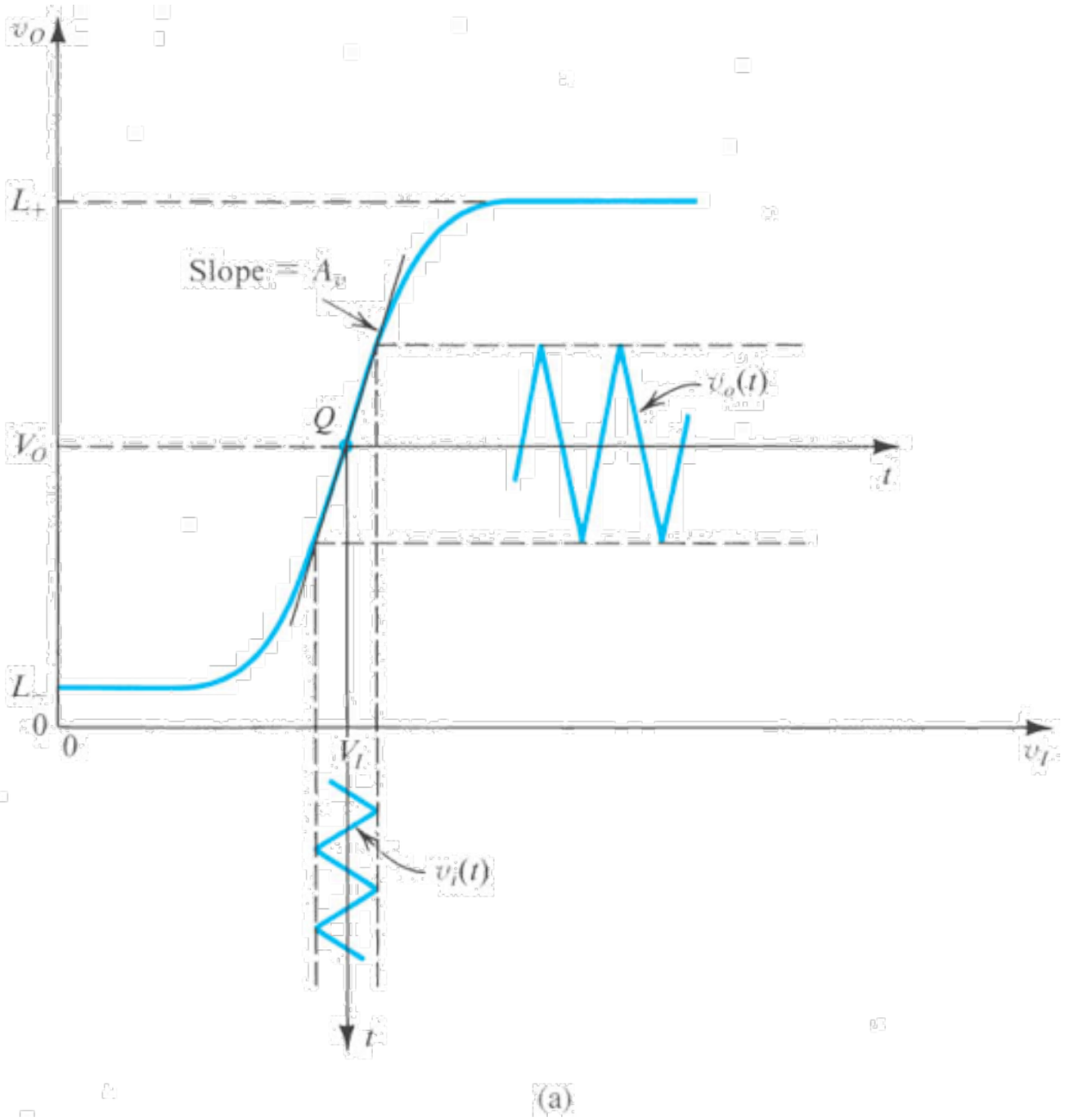


Figure 1.6 The frequency spectrum of an arbitrary waveform such as that in Fig. 1.2.



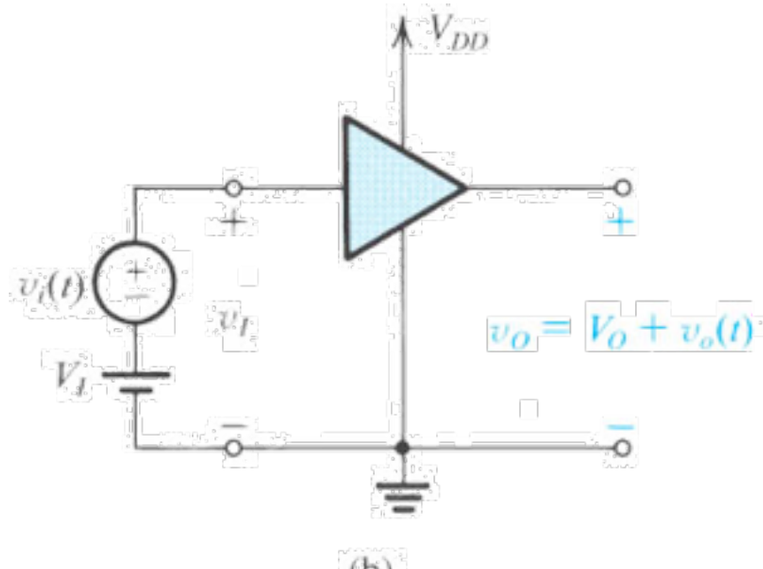


Figure 1.14 **(a)** An amplifier transfer characteristic that shows considerable nonlinearity. **(b)** To obtain linear operation the amplifier is biased as shown, and the signal amplitude is kept small. Observe that this amplifier is operated from a single power supply, V_{DD}.

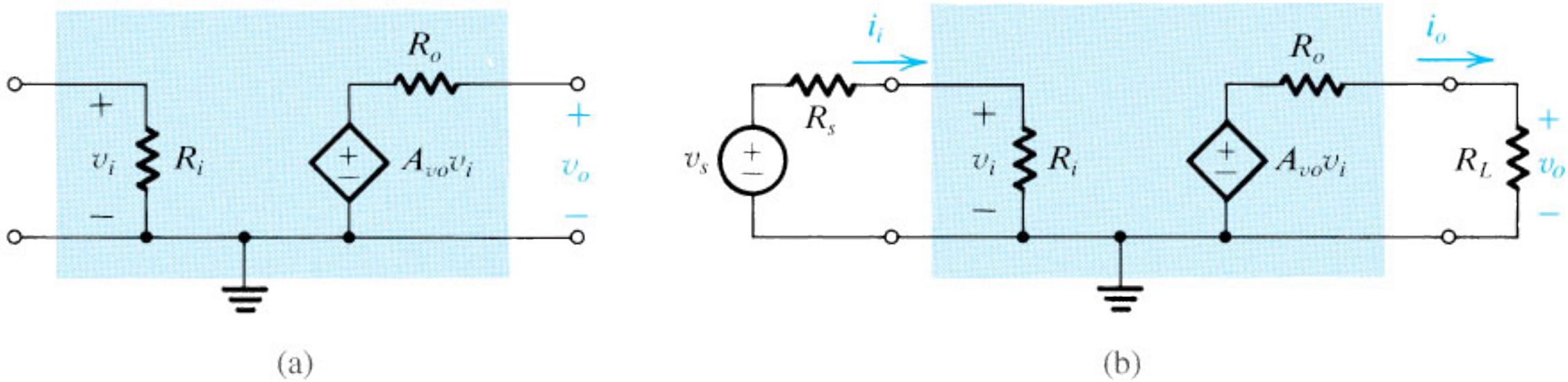


Figure 1.17 **(a)** Circuit model for the voltage amplifier. **(b)** The voltage amplifier with input signal source and load.

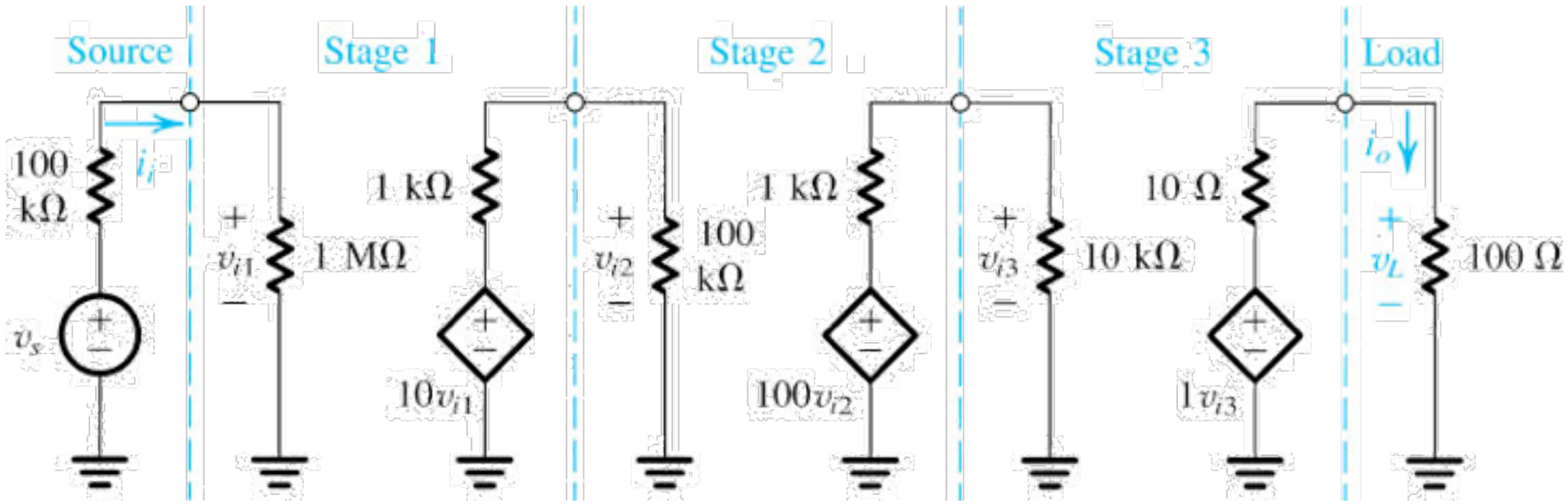
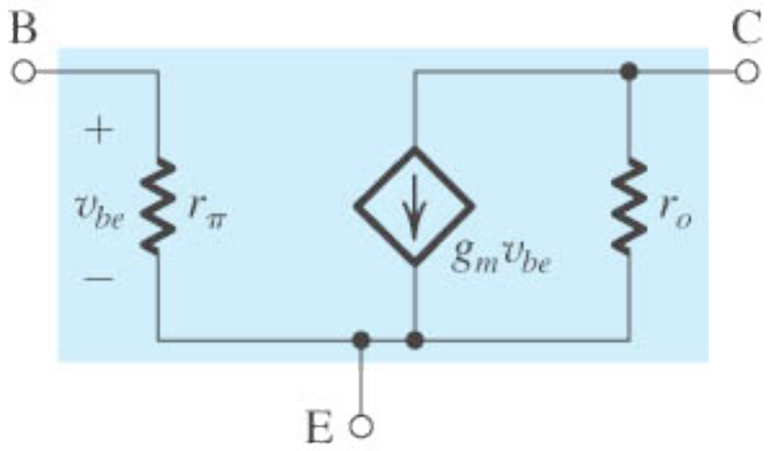
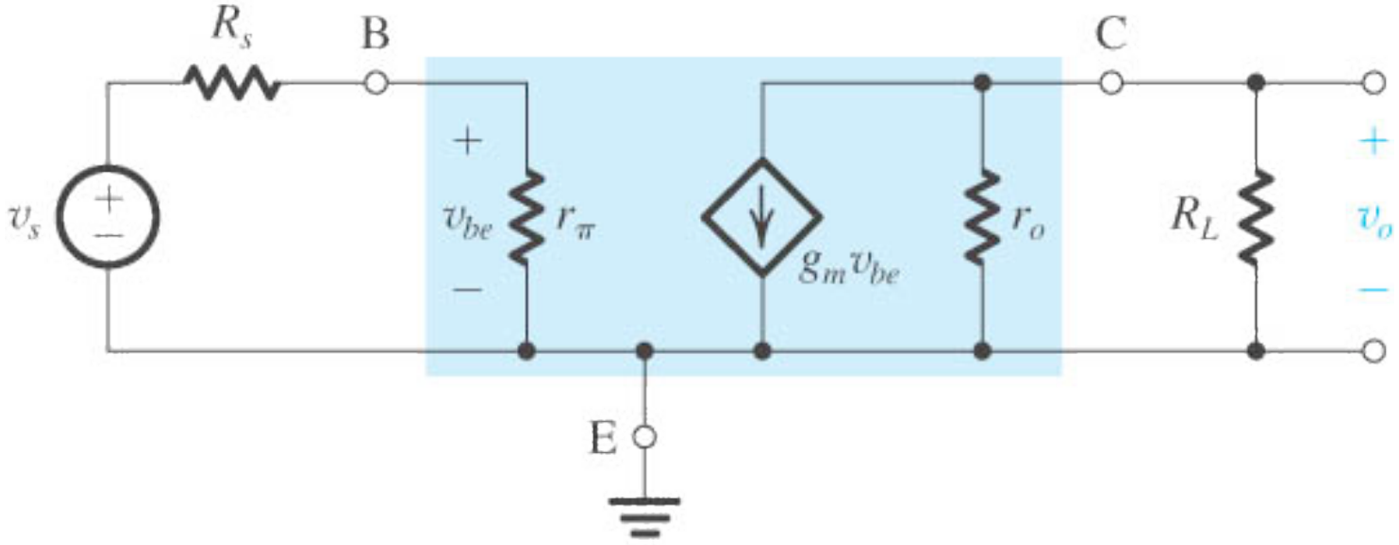


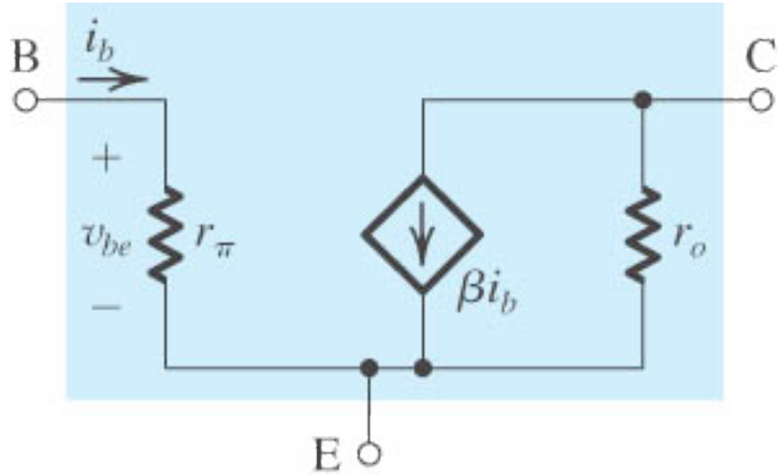
Figure 1.18 Three-stage amplifier for Example 1.3.



(a)



(b)



(c)

Figure 1.19 **(a)** Small-signal circuit model for a bipolar junction transistor (BJT). **(b)** The BJT connected as an amplifier with the emitter as a common terminal between input and output (called a common-emitter amplifier). **(c)** An alternative small-signal circuit model for the BJT.

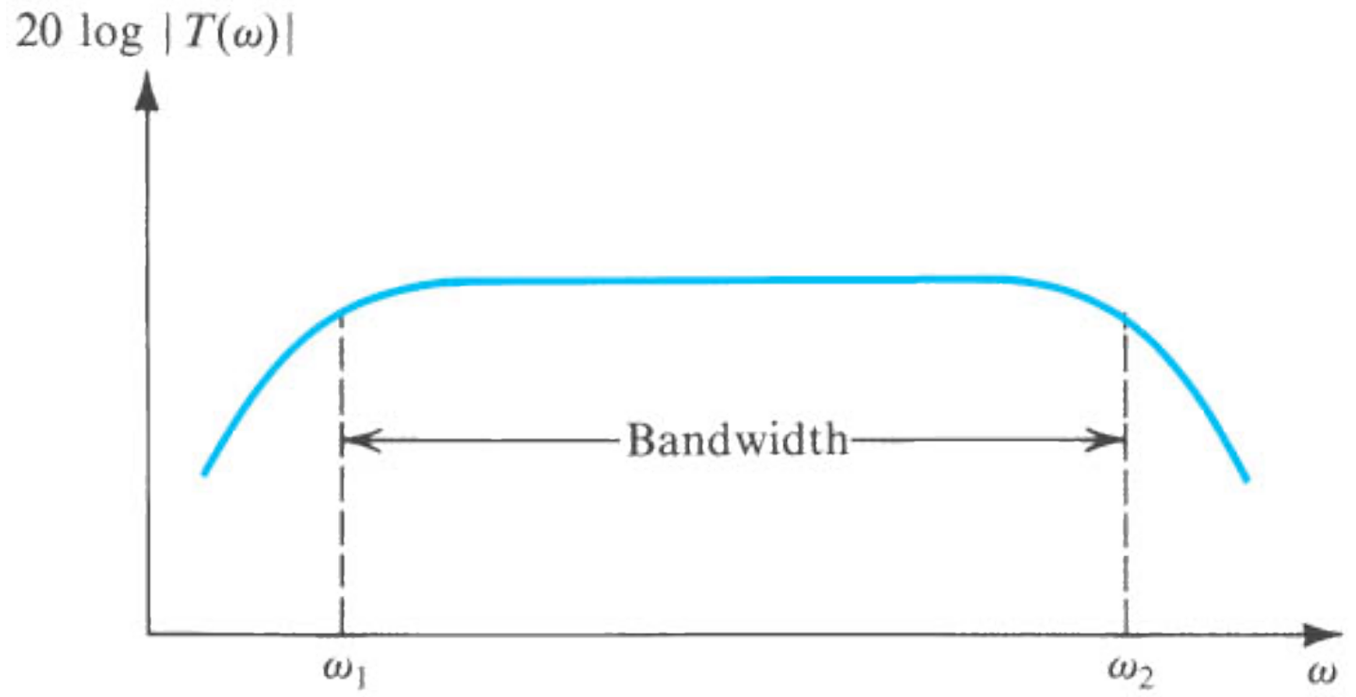


Figure 1.21 Typical magnitude response of an amplifier. $|T(v)|$ is the magnitude of the amplifier transfer function—that is, the ratio of the output $V_o(v)$ to the input $V_i(v)$.

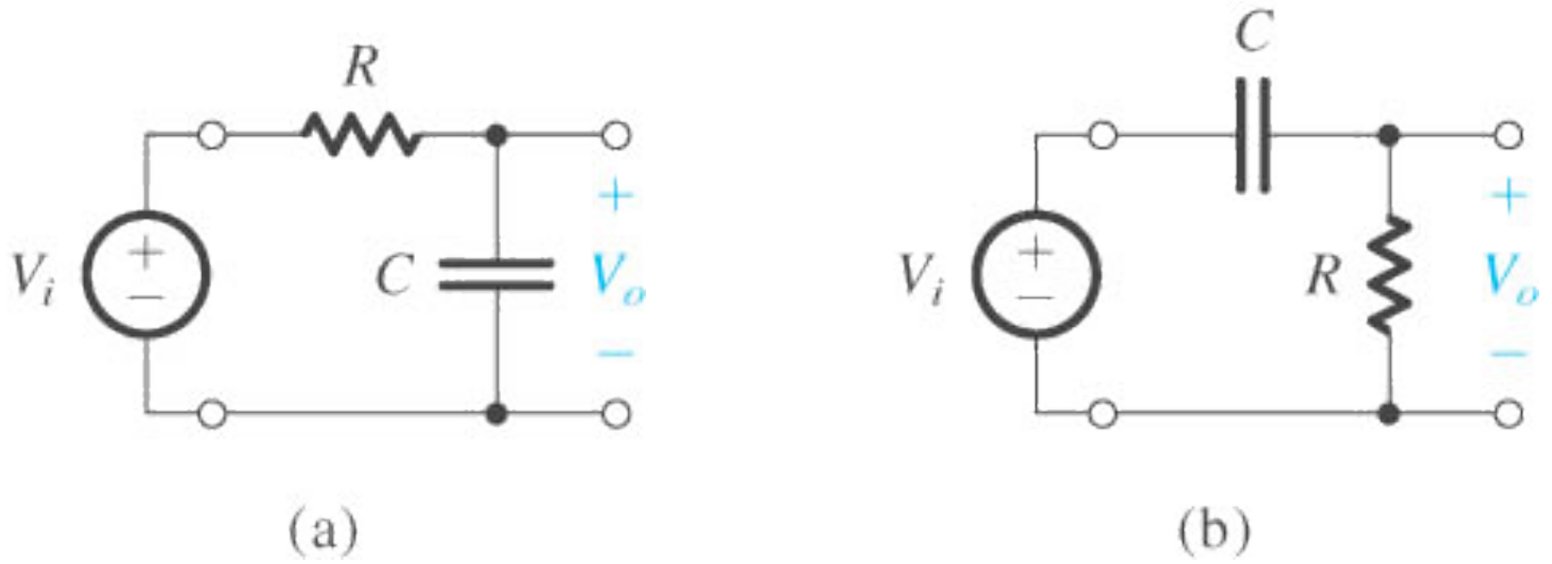


Figure 1.22 Two examples of STC networks: **(a)** a low-pass network and **(b)** a high-pass network.

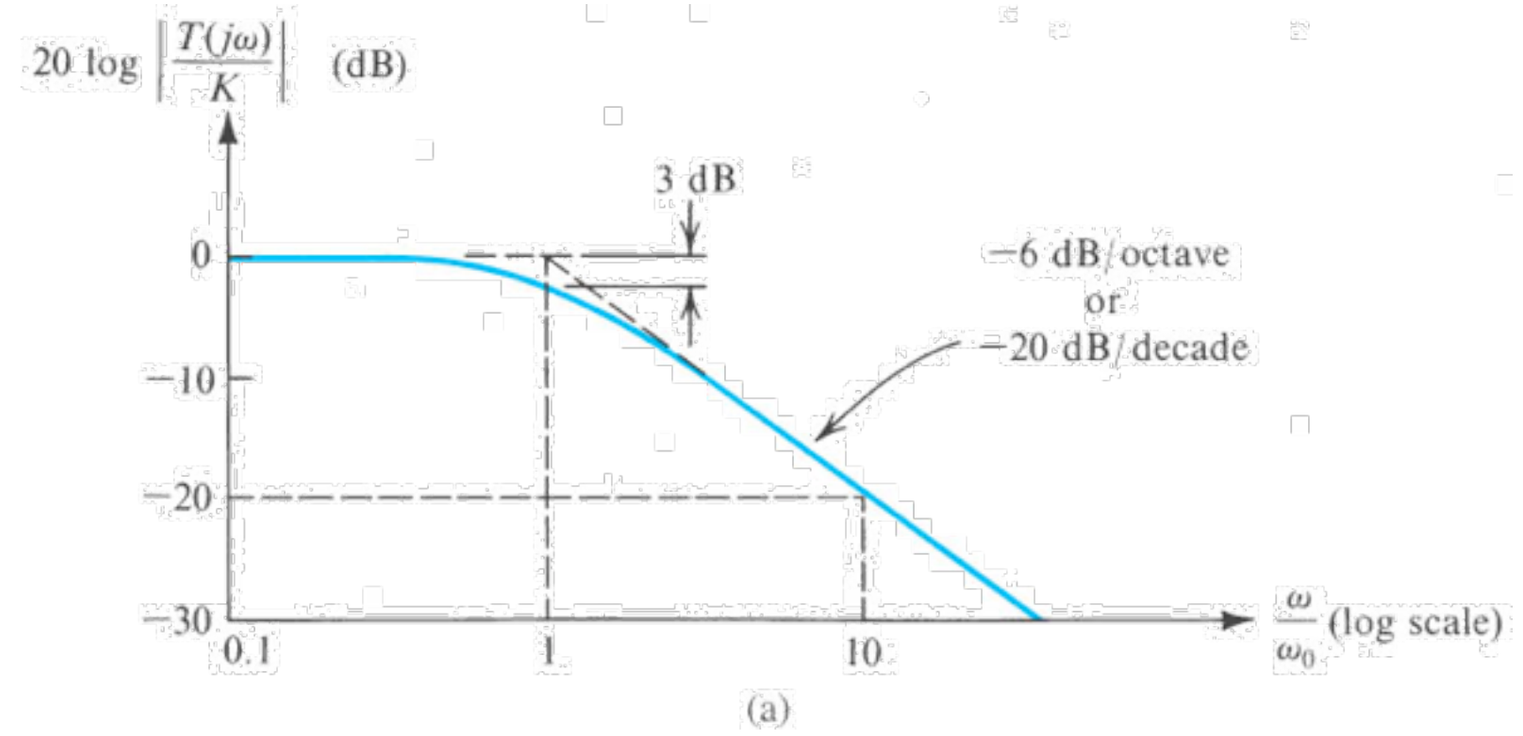


Figure 1.23 **(a)** Magnitude and **(b)** phase response of STC networks of the low-pass type.

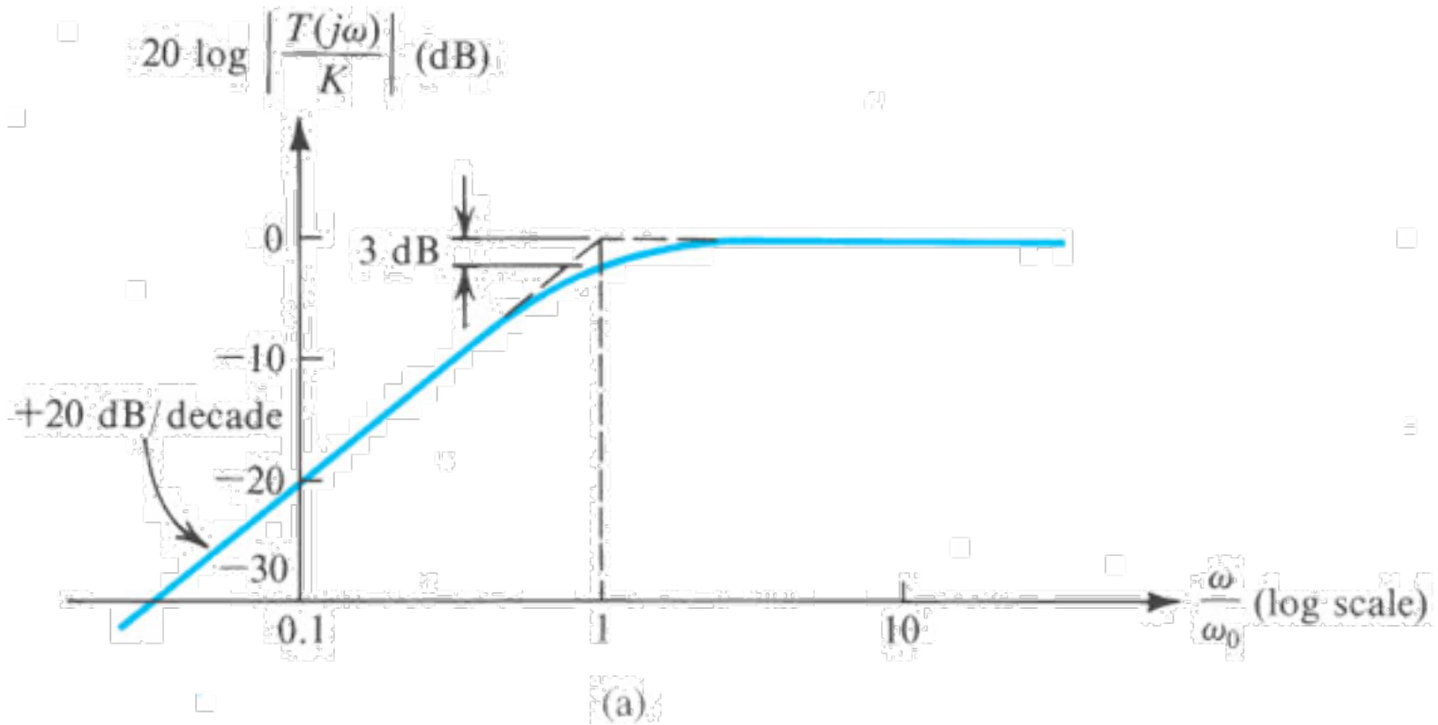


Figure 1.24 **(a)** Magnitude and **(b)** phase response of STC networks of the high-pass type.

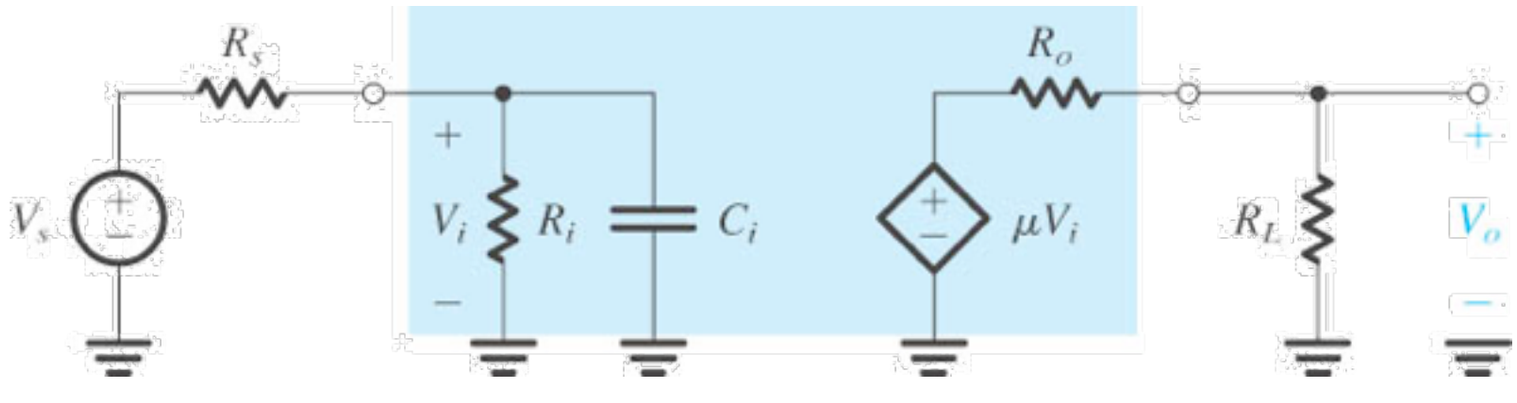
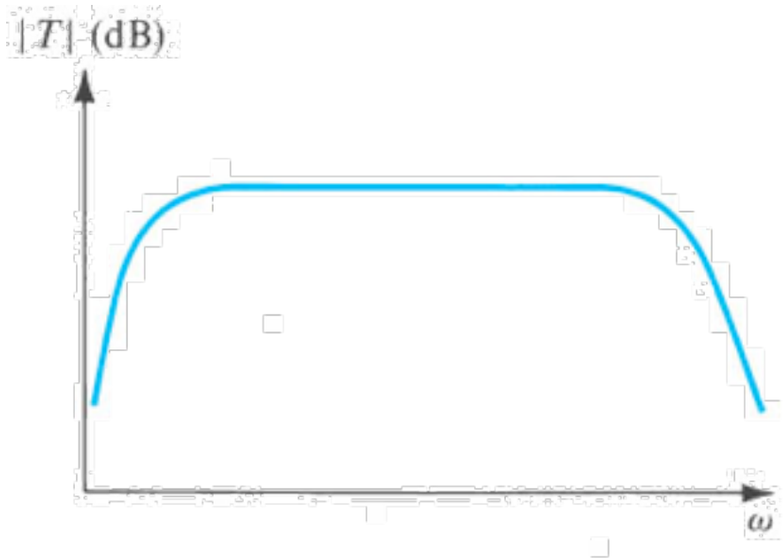
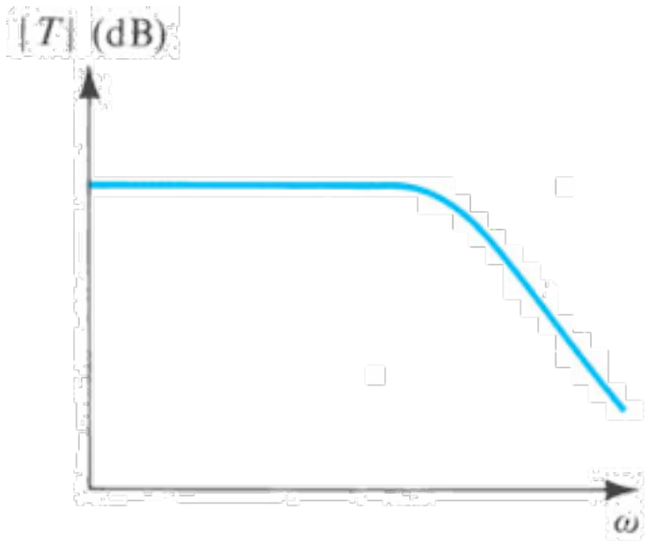


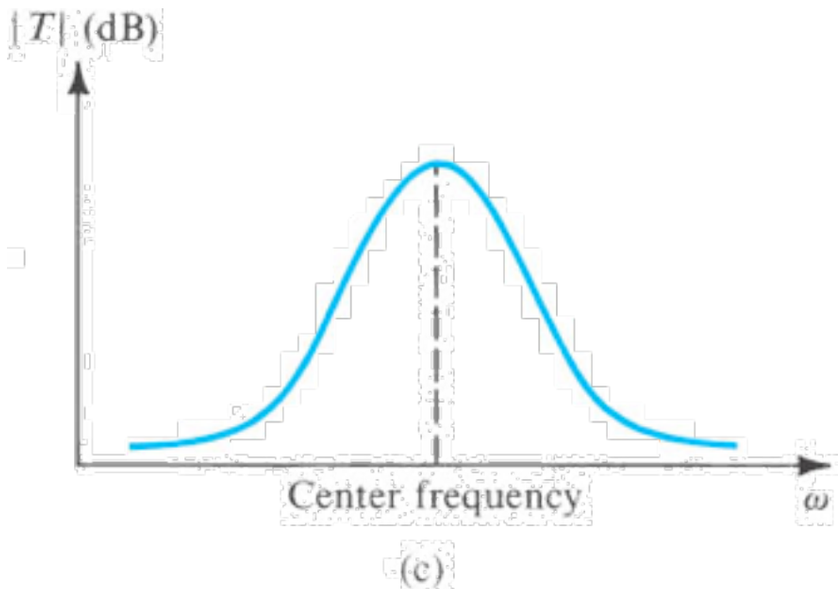
Figure 1.25 Circuit for Example 1.5.



(a)



(b)



(c)

Figure 1.26 Frequency response for **(a)** a capacitively coupled amplifier, **(b)** a direct-coupled amplifier, and **(c)** a tuned or bandpass amplifier.

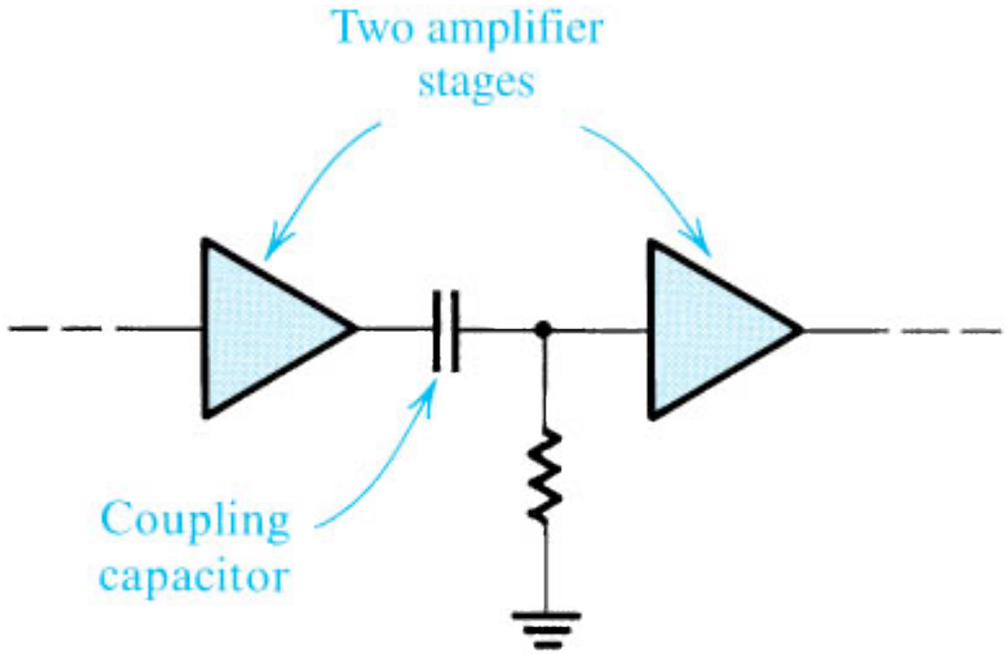


Figure 1.27 Use of a capacitor to couple amplifier stages.

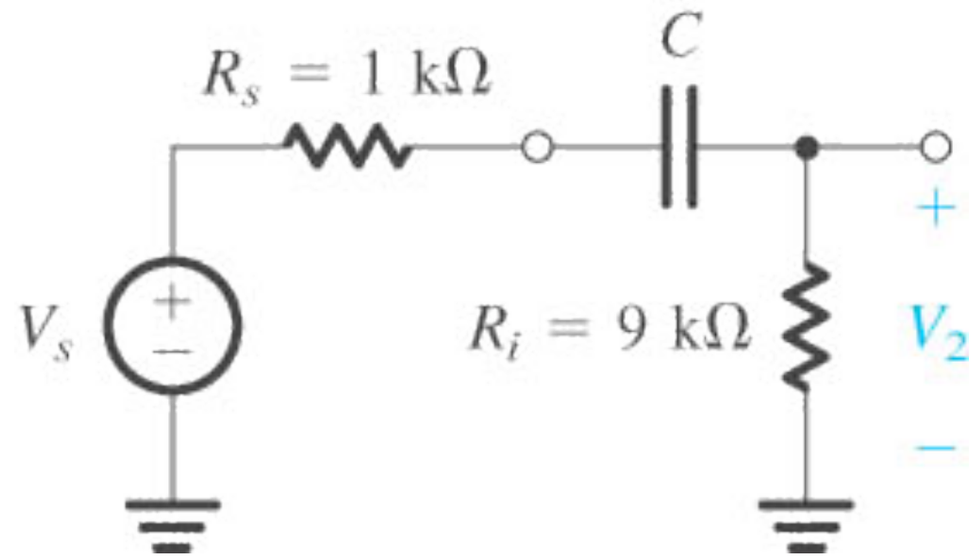
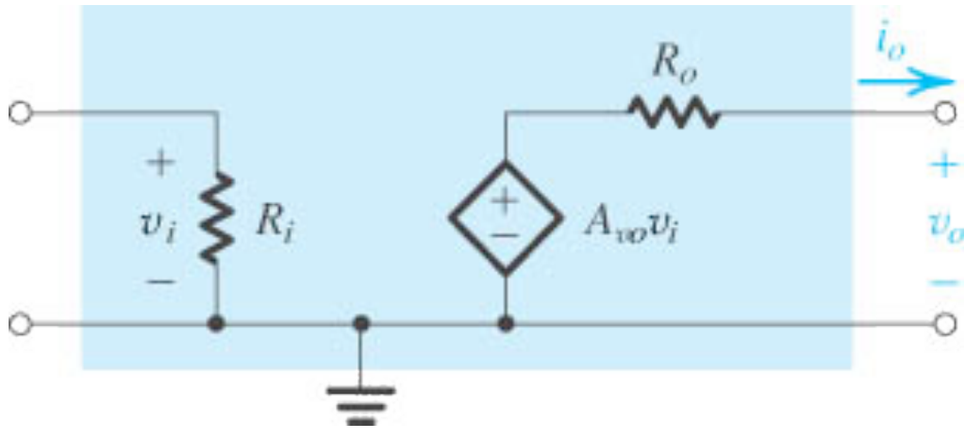
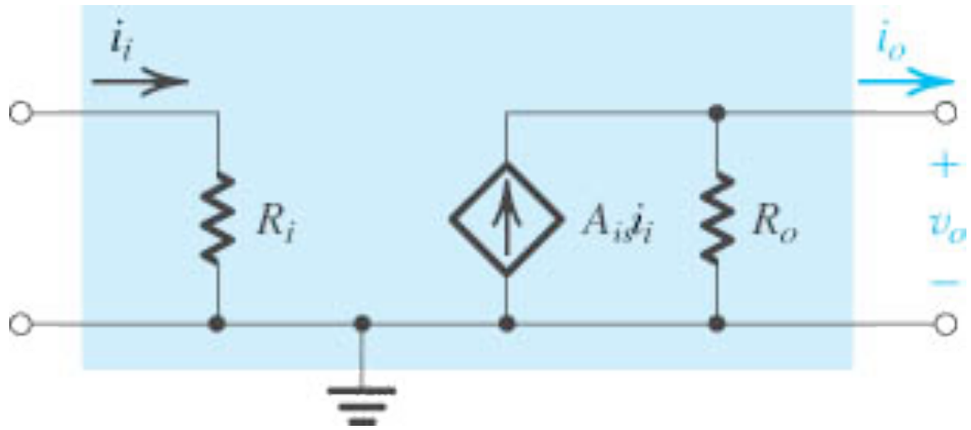
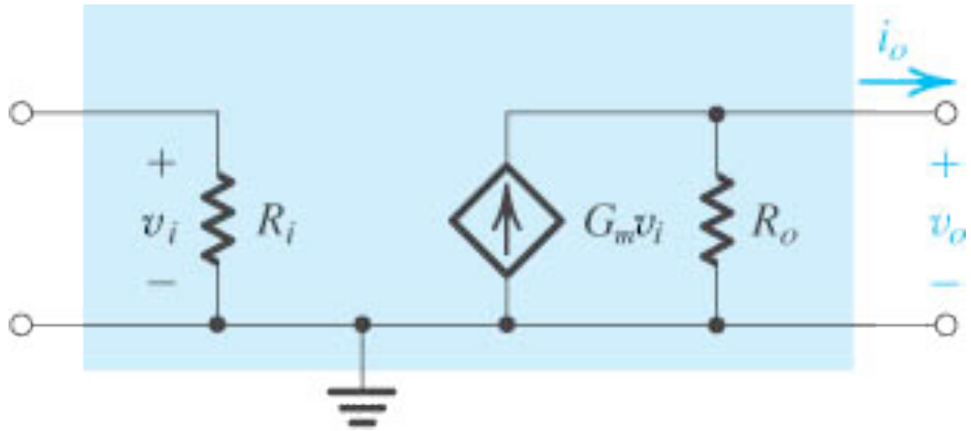


Figure E1.23







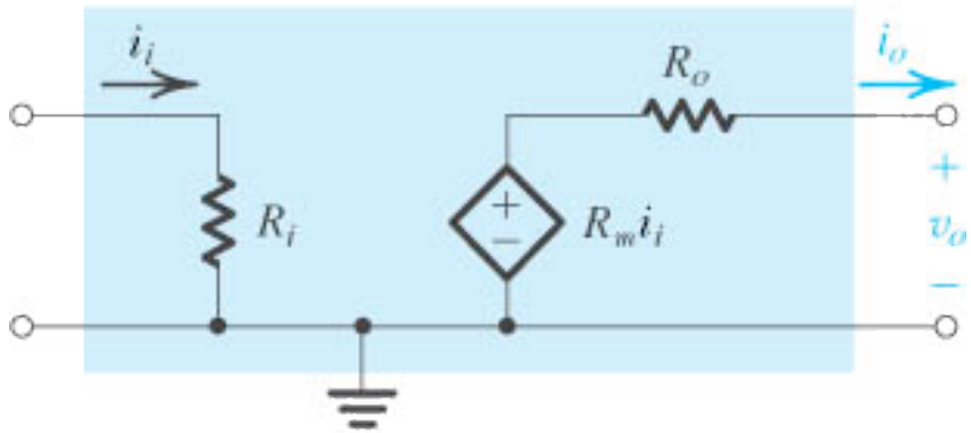


Table 1.1 The Four Amplifier Types