Due Date: 23:59, Dec.11 ,2022

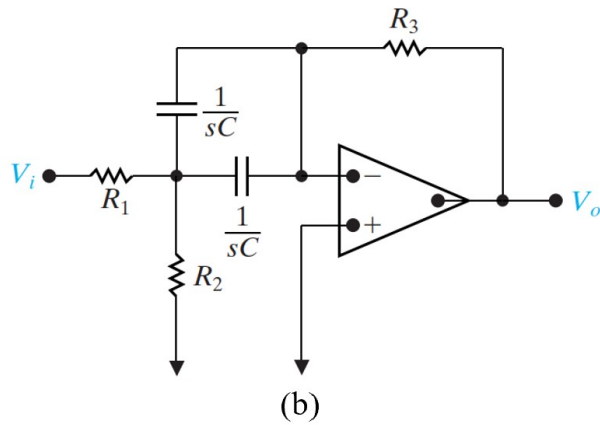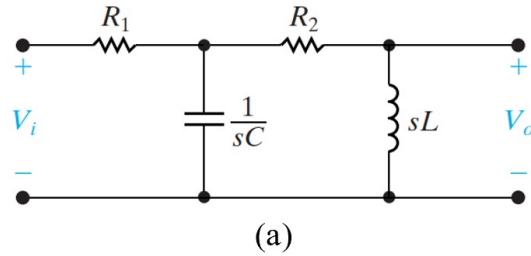**Exercise 8.1** (30%)

For the circuit shown below, find the transfer function

(a) (15%) $I_0(\omega)/I_s(\omega)$, and its zeros and poles.

(b) (15%) $V_s(\omega)/I_s(\omega)$, and its zeros and poles.
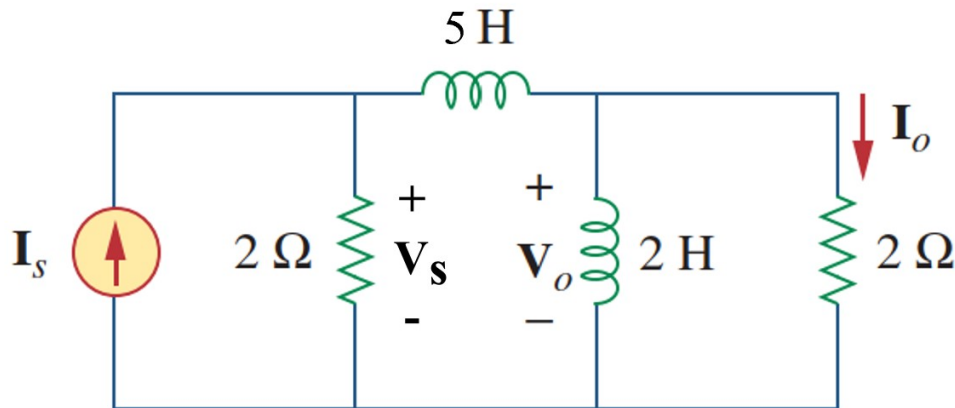
Exercise 8.2 (30%)

Find $H(s) = V_0(s)/V_i(s)$, where $s = j\omega$ in both circuits. Assume that $R_1 = R_2 = R_3 = 100\Omega$, $L = 1H$ and $C = 1mF$ for (a) and (b),
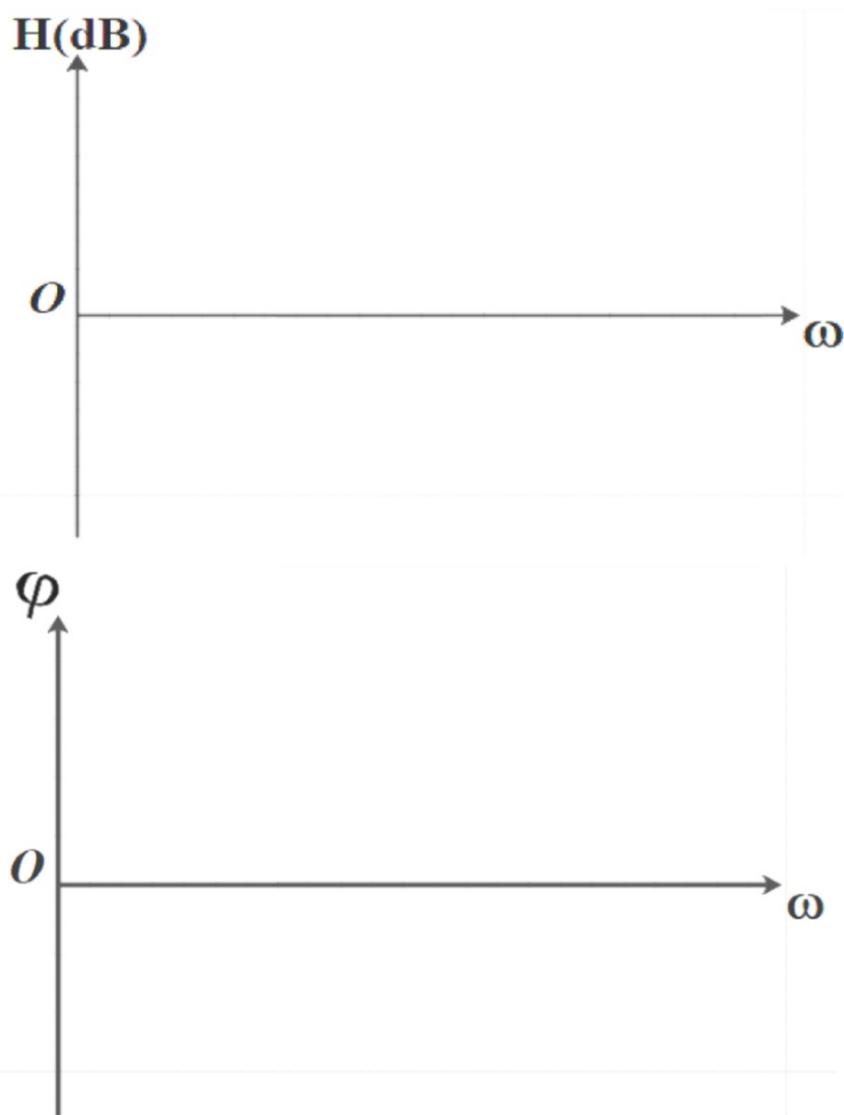

(a)

(b)

Exercise 8.3 (40%)

Obtain the Bode plots ($H - \omega$ and $\psi - \omega$ relationship) for

$$(a)H(j\omega) = \frac{0.1(20 + j\omega)}{j\omega(5 + j\omega)}$$

$$(b)H(j\omega) = \frac{100(1 + j\omega)}{j\omega(-\omega^2 + 10j\omega + 25)}$$

(a)

H(dB)

O

ω

φ

O

ω

(b)

H(dB)

O ————————————————→ ω

φ

O ————————————————→ ω