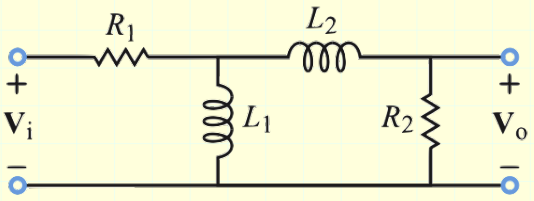
Problem 3.30 :

Given: The values $R_1 = 1\Omega, R_2 = 2\Omega, L_1 = 1mH$, and $L_2 = 2mH$; and given the circuit below



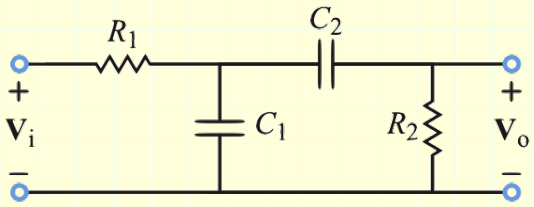
Find:

a. $H(s) = \frac{V_o}{V_i}$

b. $h(t)$

Problem 3.31 :

Given: The values $R_1 = 1\Omega$, $R_2 = 2\Omega$, $C_1 = 1\mu F$, and $C_2 = 2\mu F$; and given the circuit below



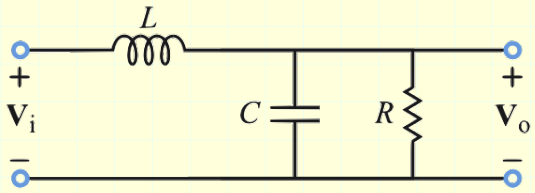
Find:

a. $H(s) = \frac{V_o}{V_i}$

b. $h(t)$

Problem 3.32 :

Given: The values $R = 5\Omega$, $L = 0.1mH$, and $C = 1\mu F$; and given the circuit below



a. $H(s) = \frac{V_o}{V_i}$

b. $h(t)$

Find:

Problem 3.33 :

Given: An LTI system is described by the LCCDE

$$\frac{d^2y}{dt^2} - 5\frac{dy}{dt} + 6y = \frac{dx}{dt} + 5x. \tag{1}$$

Find: Is the system BIBO stable?

Problem 3.36 :

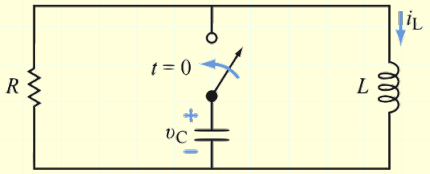
Given: An LTI system has transfer function

$$H(s) = \frac{(s+1)(s+2)}{s(s+3)} \tag{2}$$

Find: Is it BIBO stable?

Problem 4.8 :

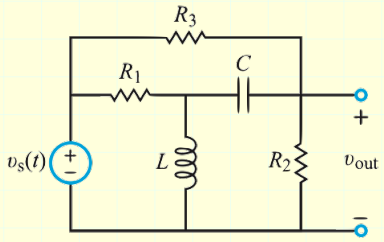
Given: Before closing the switch $v_C(0^-) = 24V$. Also, the element values are $R = 1\Omega$, $L = 0.8H$, and $C = 0.25F$.



Find: The equation for $i_L(t)$

Problem 4.9 :

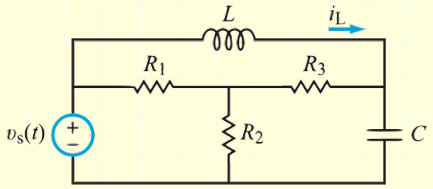
Given: The values $V_s(t) = 11u(t)\ V$. $R_1 = 2\ \Omega$, $R_2 = 4\ \Omega$, $R_3 = 6\ \Omega$, $L = 1\ H$, and $C = 0.5\ F$ with the circuit below.



Find: The voltage v_{out}.

Problem 4.11 :

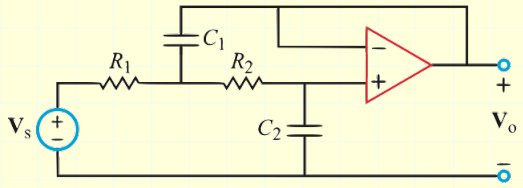
Given: The values $v_s(t) = 44u(t)\ V$, $R_1 = 2\ \Omega$, $R_2 = 4\ \Omega$, $R_3 = 6\ \Omega$, $C = 0.1\ F$, and $L = 4\ H$ with the circuit below.



Find: Using mesh-current analysis in the s-domain find $i_L(t)$ in the circuit above.

Problem 4.32 :

Given: The values $R_1 = R_2 = 100\ \Omega$ and $C_1 = C_2 = 1\ \mu F$ with the circuit below.



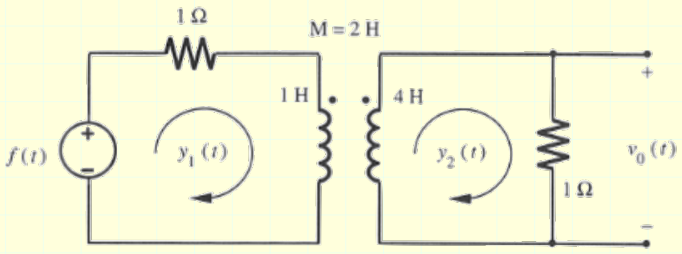
Find:

a. $H(s) = \frac{V_o}{V_s}$

b. $h(t)$

Problem 11. :

Given: The system is in zero state initially. Assume that the primary and secondary sides of the transformer are electrically connected to the same ground. The input voltage is $f(t) = 100u(t)$.



Find: $v_0(t)$ for $t \geq 0$ in the above circuit.