1) (a) Write the state equation in standard form for the circuit below.
(b) Find and plot the transfer function of the circuit below.
(c) Plot the step response of the circuit below.
(d) Plot the zero state response of the circuit below to the input \( u(t)\cos(1000t) \).

2) (a) Write the state equation in standard form for the circuit below.
(b) Find and plot the transfer function of the circuit below.
(c) Plot the step response of the circuit below.
(d) Plot the zero state response of the circuit below to the input \( u(t)\cos(1000t) \).
3) (a) Write the state equation in standard form for the circuit below when the circuit output is the node voltage at the output of the first op amp. Find the transfer function of this circuit.

(b) Write the state equation in standard form for the circuit below when the circuit output is the node voltage at the output of the second op amp. Find the transfer function of this circuit.

(c) Write the state equation in standard form for the circuit below when the circuit output is the node voltage at the output of the third op amp. Find the transfer function of this circuit.

4) (a) Write the state equation in standard form for the circuit below when the circuit output is the node voltage at the output of the op amp on the right. Find the transfer function of this circuit.

(b) Write the state equation in standard form for the circuit below when the circuit output is the node voltage at the output of the op amp on the left. Find the transfer function of this circuit.