

Chapter 2 Assignment

2.2 The input signals to a differential amplifier are

$$v_1(t) = 0.1 \cos(20\pi t) + 20 \sin(120\pi t)$$

and

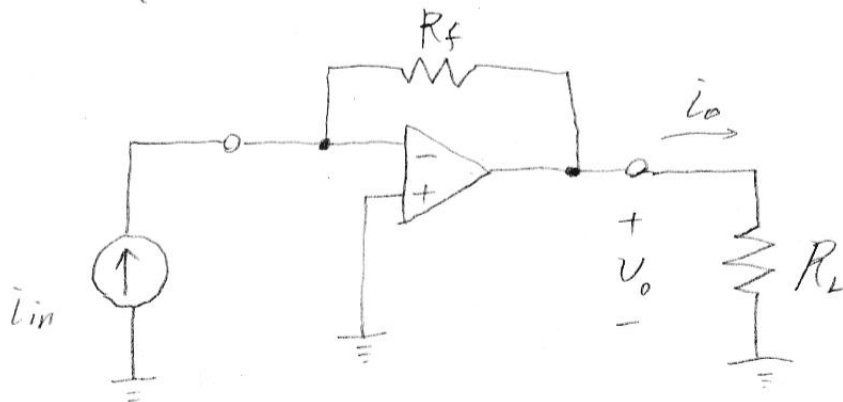
$$v_2(t) = -0.1 \cos(20\pi t) + 20 \sin(120\pi t)$$

Find expressions for the common-mode signal and differential signal.

2.9 Draw the circuit diagram of the basic inverting-amplifier configuration. Give an expression for the voltage gain of the circuit in terms of the resistors, assuming an ideal op amp. Give expressions for the input impedance and output impedance of the circuit.

2-25 Consider the circuit illustrated in the following figure.

- (a) Find an expression for the output voltage in terms of the source current and resistor values.
- (b) What value is the output impedance of this circuit?
- (c) What value is the input impedance of this circuit?
- (d) This circuit can be classified as an ideal amplifier. What type of amplifier is it?



2.31 Suppose that we are designing an amplifier that uses an op amp. What problems are associated with using very small feedback resistances?

With very large feedback resistances?

2.40 List the imperfections of a real op amp in the linear range of operation.