



RUTGERS

School of Engineering
Department of Electrical and Computer Engineering

332:221

Principles of Electrical Engineering I
Quizlette 6

Fall 2012

USING A CALCULATOR WILL SLOW YOU DOWN! Final answers must appear in the appropriate box. Show your work outside the box.

1. Basic Stuff:

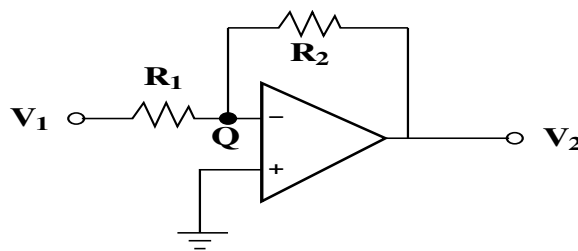


Figure 1: Op-Amp circuit diagram for problem 1

- (a) (1 pt) What type of circuit is depicted in FIGURE 1?

Inverting Amplifier

- (b) (2 pt) If the op-amp is ideal what is the voltage of the node labeled Q ?

$$V_Q = 0$$

- (c) (2 pt) Assuming the circuit is operating in its linear region, what is the ratio $\frac{V_2}{V_1}$ in terms of the resistance values?

$$\frac{V_2}{V_1} = -\frac{R_2}{R_1}$$

2. **Getting Cute:** The supply voltage for the ideal op-amp circuit of FIGURE 2 is $\pm 10V$.

- (a) (2 pts) What is V_2 in terms of the voltage P ?

Non-inverting amp: $V_2 = 11P$ so long as $V_2 \in (-10V, 10V)$.

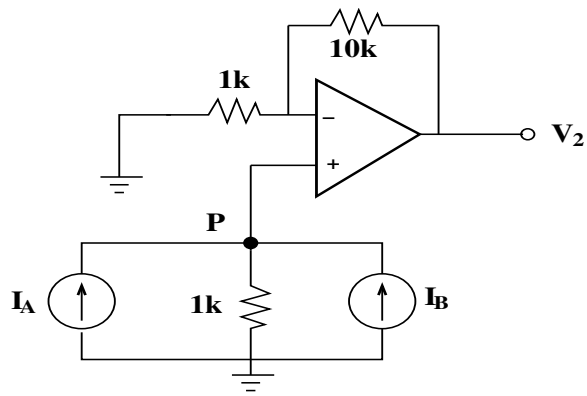


Figure 2: Circuit diagram for problem 2

(b) (2 pts) What is V_2 in terms of I_A and I_B .

$$V_2 = 1.1 \times 10^4 (I_A + I_B) \text{ so long as } V_2 \in (-10V, 10V).$$

(c) (1 pts) Please provide a function-descriptive name for this amplifier circuit.

Non-inverting summing amplifier