

# Experiment 8: Op-Amp Circuits

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## Post-Lab Report

**A.**

Prove theoretically that for an ideal op-amp

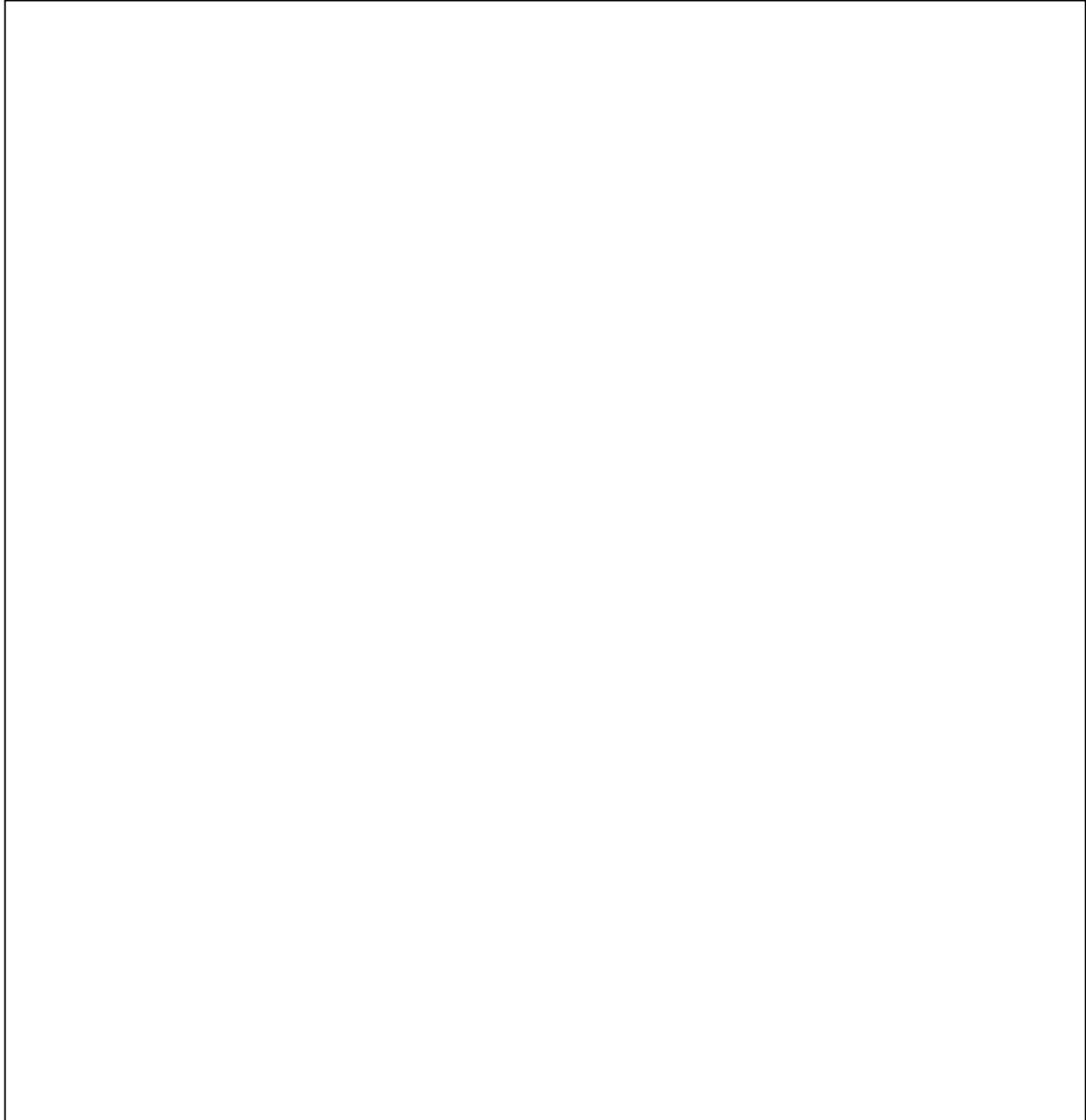
$$V_o = -\frac{R_2}{R_1} V_I$$

Can you find a relationship between the low -frequency gain and bandwidth?

**B.**

Prove theoretically that for an ideal op-amp

$$V_o = \left(1 + \frac{R_2}{R_1}\right) V_I$$



C.

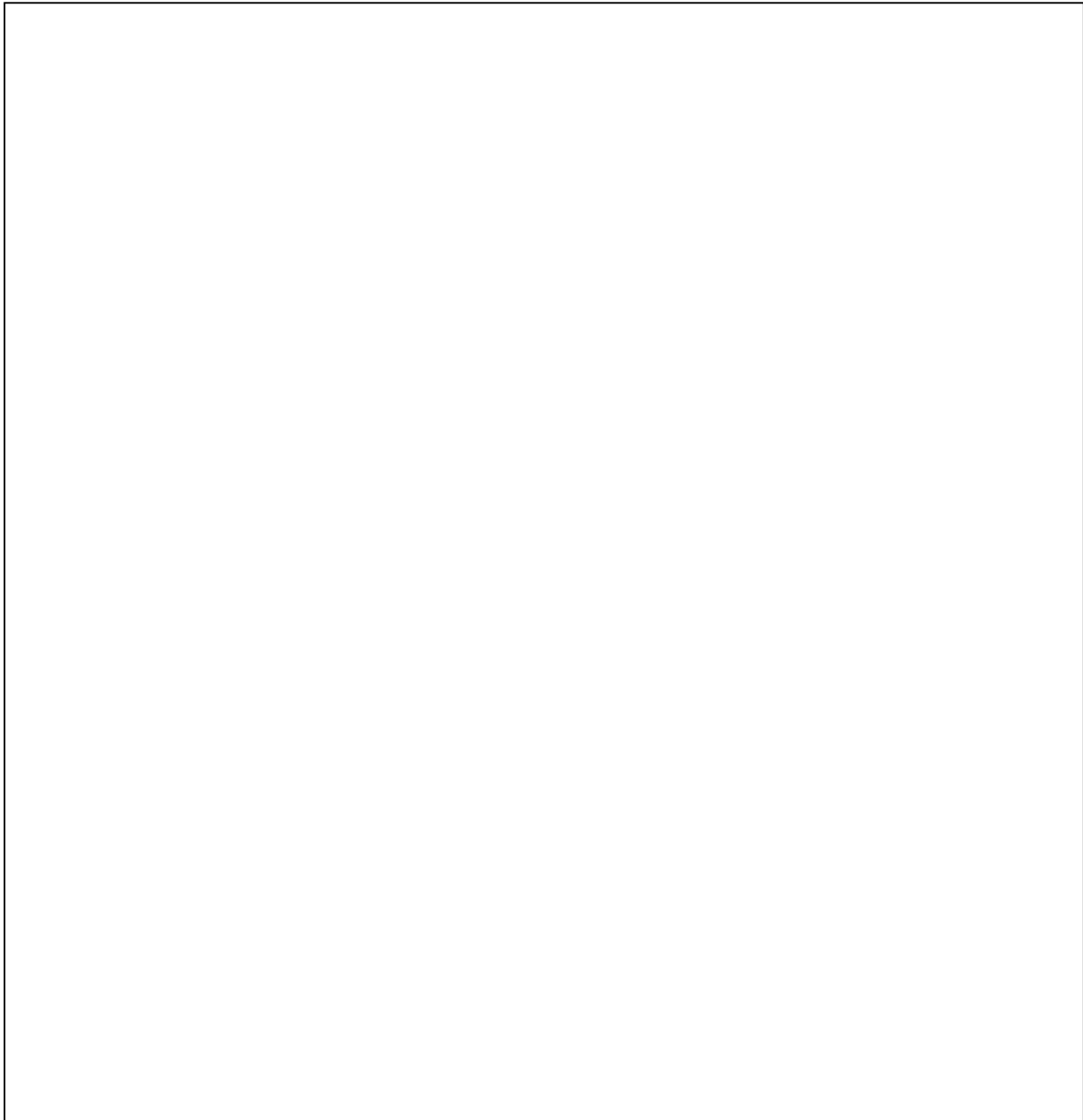
How does this bandwidth compare with that of the non-inverting amplifier?

**E.**

Prove theoretically that for an ideal op-amp

$$V_o = -\frac{1}{RC} \int V_I dt$$

To verify experimentally, you should prove that the peak to -peak output voltage is equal, in absolute value, to the area enclosed under the square wave (for  $0 < t < T/2$  or for  $T/2 < t < T$ ) divided by the product  $RC$ .



**F.**

Prove theoretically that for an ideal op-amp

$$V_o = -RC \frac{dv_I}{dt}$$

To prove experimentally, you should prove that the output voltage level is equal, in absolute value, to the product RC multiplied by the slope of the triangular input signal.

