Operational Amplifiers
Circuit Schematics

• Inverting Amplifier

Gain: \[
\frac{v_{out}}{v_{in}} = K = -\frac{R_2}{R_1}
\]
here: \(R_1 = 10k, R_2 = 0 \sim 100k\)
⇒ \(K = 0 \sim (-10)\)

• Non-inverting Amplifier

Gain: \[
\frac{v_{out}}{v_{in}} = K = 1 + \frac{R_2}{R_1}
\]
here: \(R_1 = 10k, R_2 = 0 \sim 100k\)
⇒ \(K = 1 \sim 11\)
Components

- OpAmp (LF 411)
- Potentiometer

[Diagram of OpAmp (LF 411)]

[Diagram of Potentiometer]

[Diagram of Circuit Diagram]
Constructed circuit
Experimental results

- Input and output of inverting amplifier when $R_2 = 50k$.
  Input: sinusoidal, frequency 1 kHz, peak to peak 0.5 V.
Experimental results

- Input and output of non-inverting amplifier when $R_2 = 50k$. Input: sinusoidal, frequency 1 kHz, peak to peak 0.5 V.