

# Aplicaciones de los amplificadores operacionales

## Amplificador restador inversor

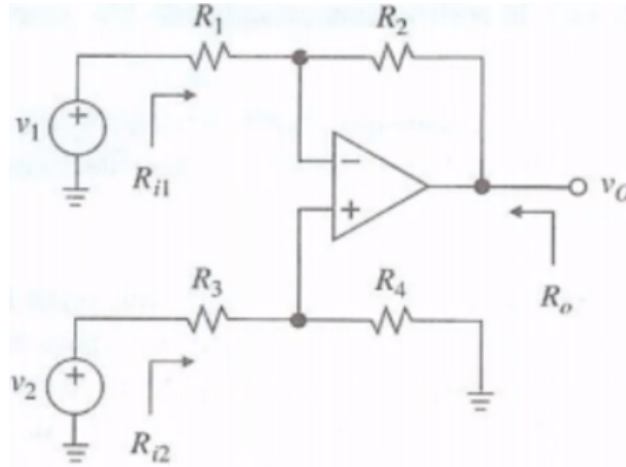


Figura 1: Amplificador restador inversor.

$$V_{out} = V_2 \left( \frac{(R_1 + R_2)R_4}{(R_4 + R_3)R_1} \right) - V_1 \left( \frac{R_2}{R_1} \right)$$

En el caso de que  $R_1 = R_2 = R_3 = R_4 = R$ :

$$V_{out} = V_2 - V_1$$

## Amplificador diferenciador (derivador) inversor

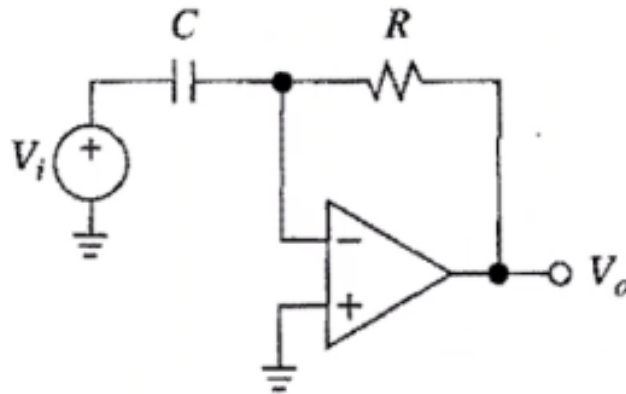


Figura 2: Amplificador diferenciador

$$V_{out} = -RC \left( \frac{dV_{in}(t)}{dt} \right)$$

## Amplificador integrador inversor

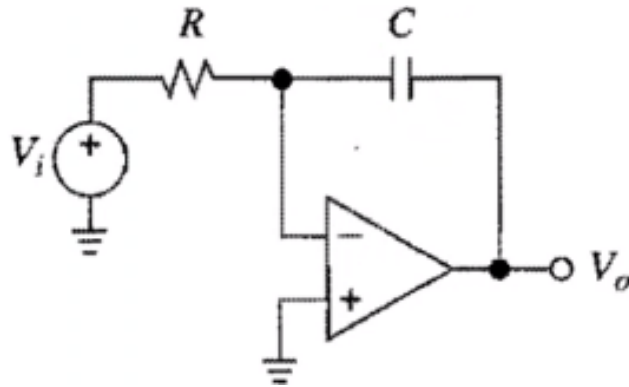


Figura 3: Amplificador integrador

$$V_{out} = -\frac{1}{RC} \int V_{in}(t) dt$$