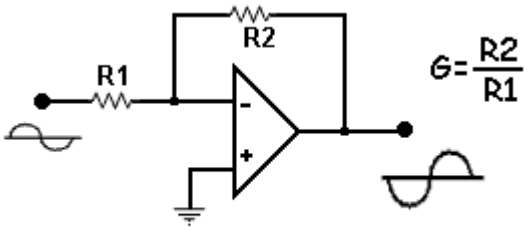
Alvaro Delgado Zumbado

Análisis de sistemas lineales

Amplificadores operacionales

1. **Inversor**



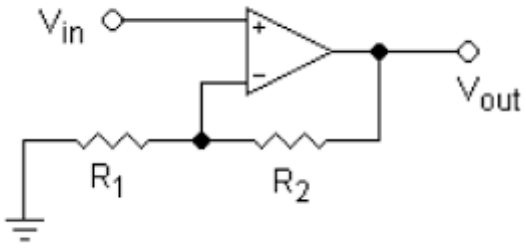
amplificador inversor

Función de transferencia

$$\frac{V_{out}}{V_{in}} = -\frac{R2}{R1}$$

$$V_{out} = -V_{in} * \frac{R2}{R1}$$

2. **No inversor**

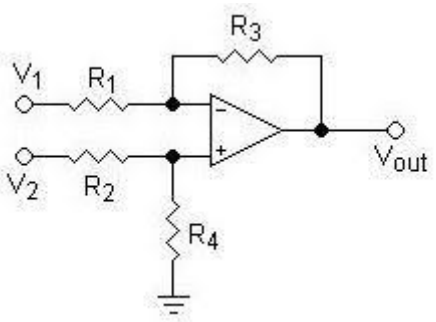


Función de transferencia

$$\frac{V_{out}}{V_{in}} = 1 + \frac{R2}{R1}$$

$$V_{out} = V_{in} * (1 + \frac{R2}{R1})$$

3. **Restador**



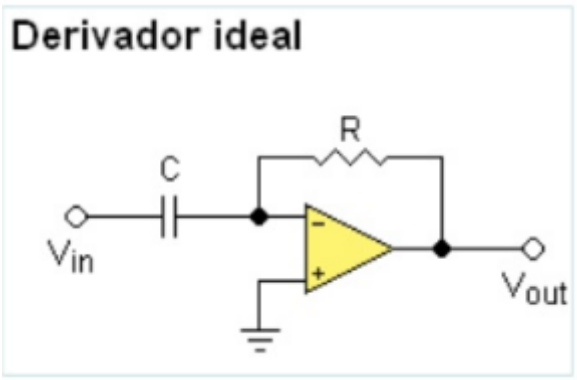
Función de transferencia

$$V_{out} = V_2 * \left(\frac{(R3 + R1) * R4}{(R4 + R2) * R1}\right) - V_1\left(\frac{R2}{R1}\right)$$

Se puede reducir la expresión con resistencias iguales

$$V_{out} = (V_2 - V_1) * \frac{R2}{R1}$$

4. **Derivador**



Función de transferencia

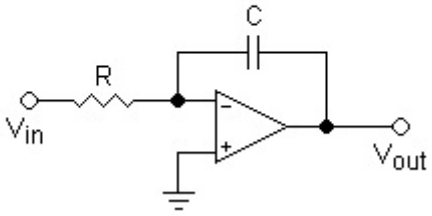
$$Z_1 = \frac{1}{JWC} = \frac{-1}{SC} \qquad Z_2 = R$$

$$\frac{V_{out}}{V_{in}} = -\frac{Z_2}{Z_1}$$

$$V_{out} - V_{in} * \left(\frac{Z_2}{Z_1}\right)$$

5. Integrador

$$\frac{Vo}{Vi} = \int_0^t -\frac{Vi}{RC}\,dt + Vinicial$$



Función de transferencia

$$Z_1 = R \qquad Z_2 = \frac{1}{JWC} = \frac{-1}{SC}$$

$$\frac{V_{out}}{V_{in}} = -\frac{Z_2}{Z_1}$$

$$V_{out} - V_{in} * \left(\frac{Z_2}{Z_1}\right)$$