

Bài 1:

* TH1: BJT thông $\Rightarrow R_g = 0$; V_{out}
khi đó:

$$V_{out} = - \frac{R_5}{R_3} \cdot V_4$$

$$\Rightarrow -2,5 = - \frac{R_5}{R_3} \cdot 5$$

$$\Rightarrow \frac{R_5}{R_3} = \frac{1}{2}$$

* TH2: BJT khóa $\Rightarrow R_g = 10 \text{ k}\Omega$
khi đó:

$$V_{out} = \frac{R_3 + R_5}{R_3} \cdot \frac{R_g}{R_g + R_4} \cdot V_4 - \frac{R_5}{R_3} \cdot V_4$$

$$\Rightarrow 2,5 = \frac{R_3 + R_5}{R_3} \cdot \frac{10}{10 + R_4} \cdot 5 - \frac{R_5}{R_3} \cdot 5$$

$$\Rightarrow 1 = \frac{3}{2} \cdot \frac{10}{10 + R_4}$$

$$\Rightarrow R_4 = 5 \text{ k}\Omega$$

Chọn $R_5 = 1 \text{ k}\Omega$

$R_3 = 2 \text{ k}\Omega$

Thực hiện mô phỏng

