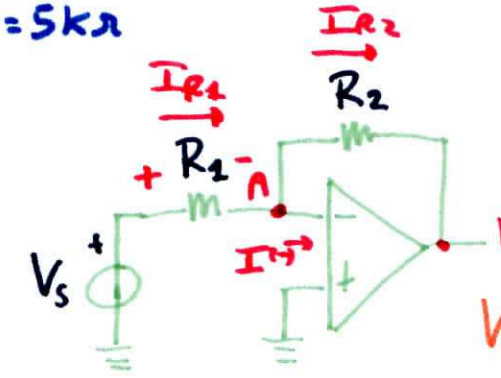
$V_{pp} = 1V \quad R_1 = 1k\Omega \quad R_2 = 5k\Omega$

$A_d = 10^5$

1) $V_d = ?$

$A_d \to \infty \quad SR = 1V/\mu s$

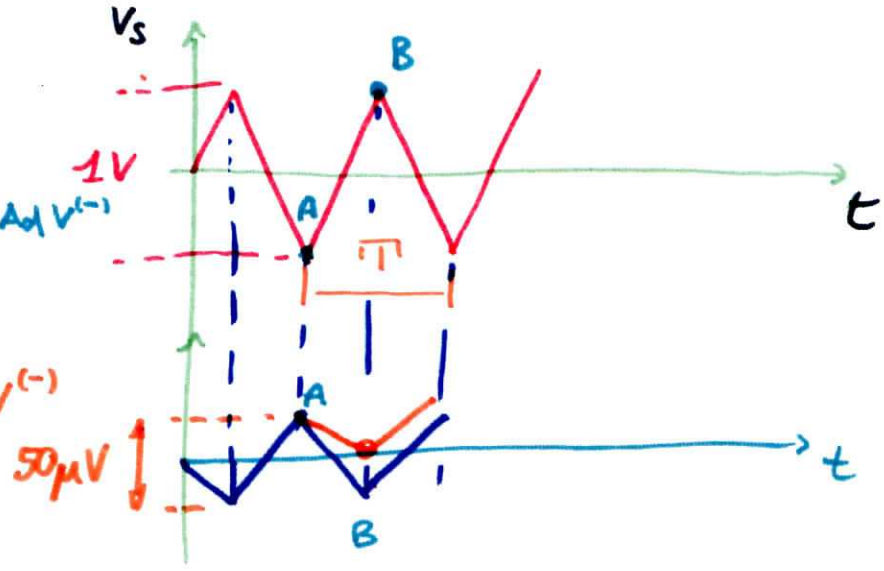
2) T_{minimo}



$V_{out} = A_d \cdot V_d = -A_d V^{(-)}$

$V_d = V^{(+)} - V^{(-)}$

$V_d = -V^{(-)}$ (poiché $V^{(+)} = 0$)



NODO A

$$I_{R1} = I_{R2} + I^{(-)} \qquad [I^{(-)} = -A_d V^{(-)}]$$

① $$\frac{V_S - V^{(-)}}{R_1} = \frac{V^{(-)} - V_{out}}{R_2} \Rightarrow \underbrace{-V^{(-)}}_{V_d} = -V_S \frac{1}{1 + \underbrace{\frac{R_1}{R_2}}_{1/5} + A_d \underbrace{\frac{R_1}{R_2}}_{10^5 \cdot \frac{1}{5}}} \overset{\approx}{=} \boxed{-V_S \left(\frac{50}{10^6}\right) = V_d}$$

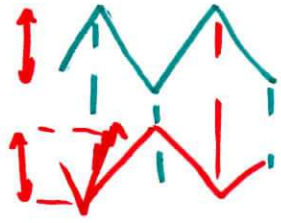
$50 \cdot 10^{-6}\ V$

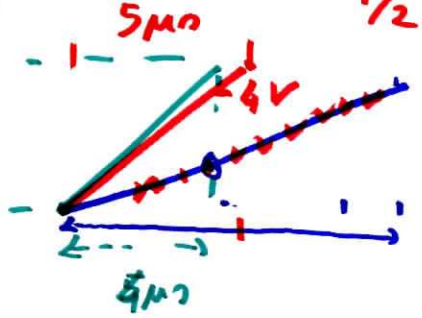
② $V_{out} = V_S\left(-\frac{R_2}{R_1}\right) = -5$

$V_{out_{pp}} = 5V$

$SR \geq \frac{\Delta V_{out}}{T/2}$

$T \geq \frac{2 \cdot \Delta V_{out}}{SR} = \frac{2 \cdot 5V}{\frac{1V}{10^{-6}s}} = 10 \cdot 10^{-6}\ s = 10\mu s$





$T_{min} = 10\mu s$