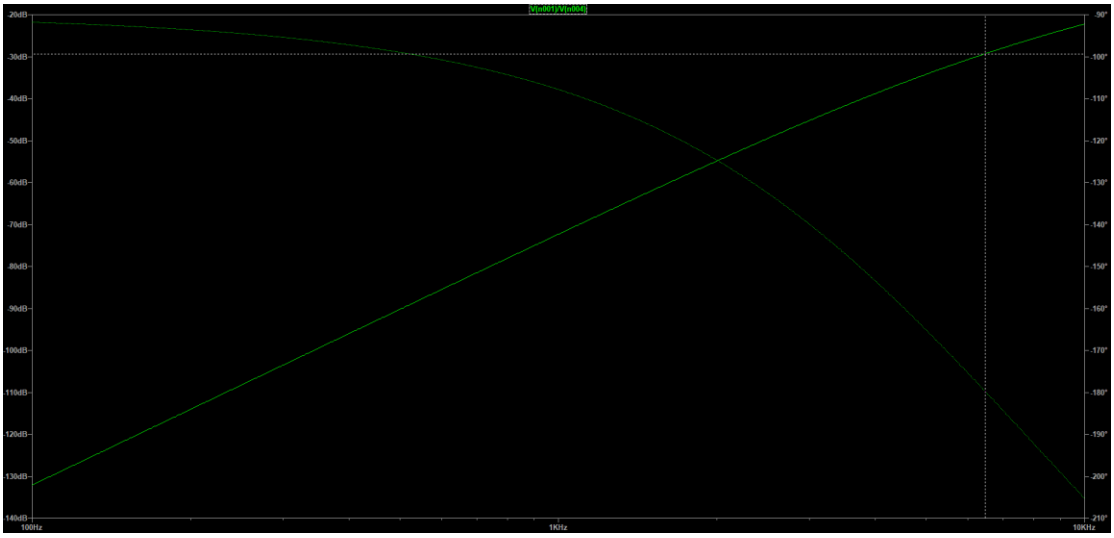
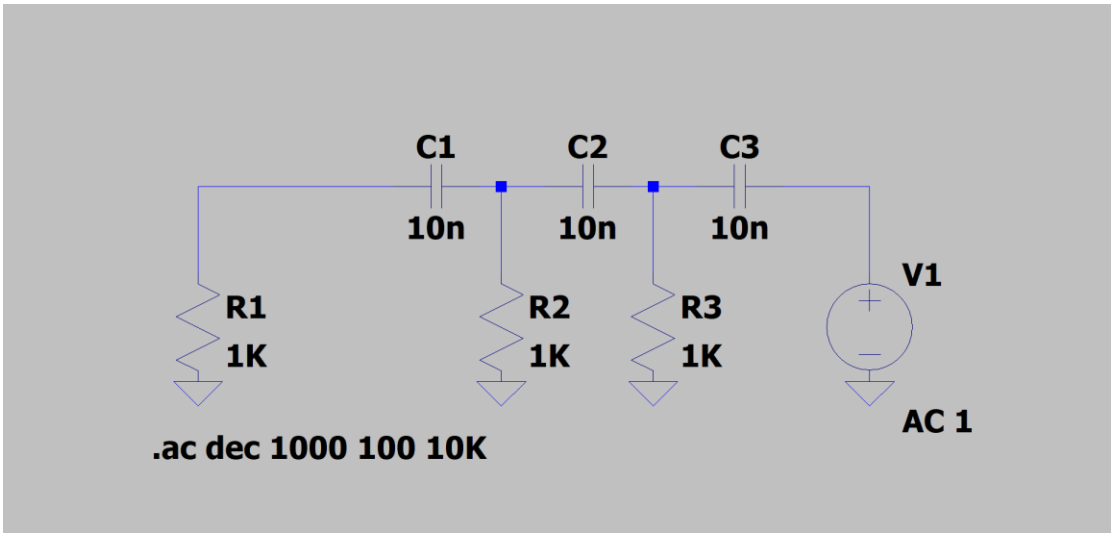
1. On sait que $H = \frac{A}{1-A\beta}$. On peut trouver que $A = -\frac{R2}{R1}$ et $\beta = \frac{1}{1-\frac{5}{(wRC)^2}-j(\frac{6}{wRC}-\frac{1}{(wRC)^3})}$

   parce que $\begin{cases} \frac{jwCV_1}{jwC+\frac{1}{R}} = V_e \\ \frac{jwCV_e+jwCV_2}{2jwC+\frac{1}{R}} = V_1 \\ \frac{jwCV_s+jwCV_1}{2jwC+\frac{1}{R}} = V_2 \end{cases}$ et $\beta = \frac{V_s}{V_e}$.

2. On fait la simulation



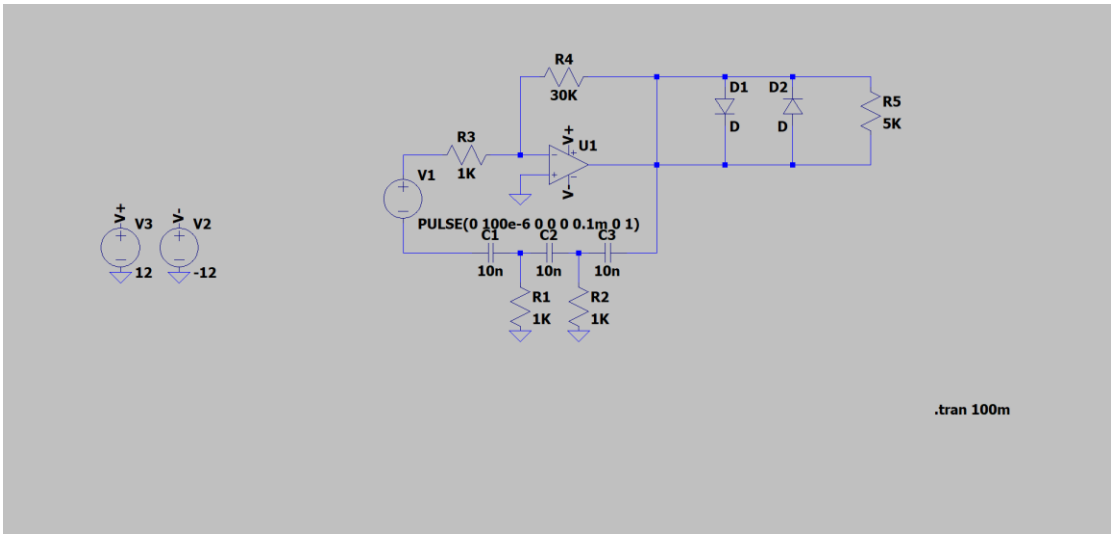


3. On sait que $w_0 = \frac{1}{\sqrt{6}RC} = 6.49$, $A_0 = 1 - 5 * 6 = -29$. À travers de la simulation et la calculation, $w_0 = 6.49747$
4. 6.48634433548176e+003 (-2.92787784114788e+001dB,-1.79900456208026e+002?
   6.50129690343028e+003 (-2.92373891408187e+001dB,1.79965833952562e+002?
   On peut trouver ces deux lignes d'information

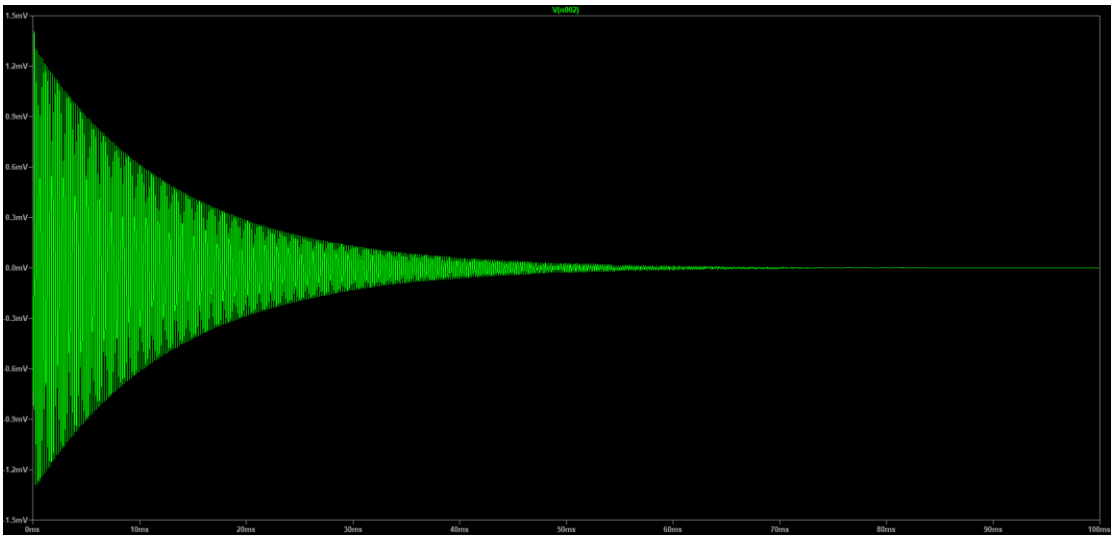
   Donc, à travers de la définition de la stabilité. $S = \frac{360-179.90045-179.96583}{180*\frac{6.50129-6.48634}{6.49747}} * pi = 1.011$.

   Dans le cours, S = 1.01. Donc la résultat est bon.

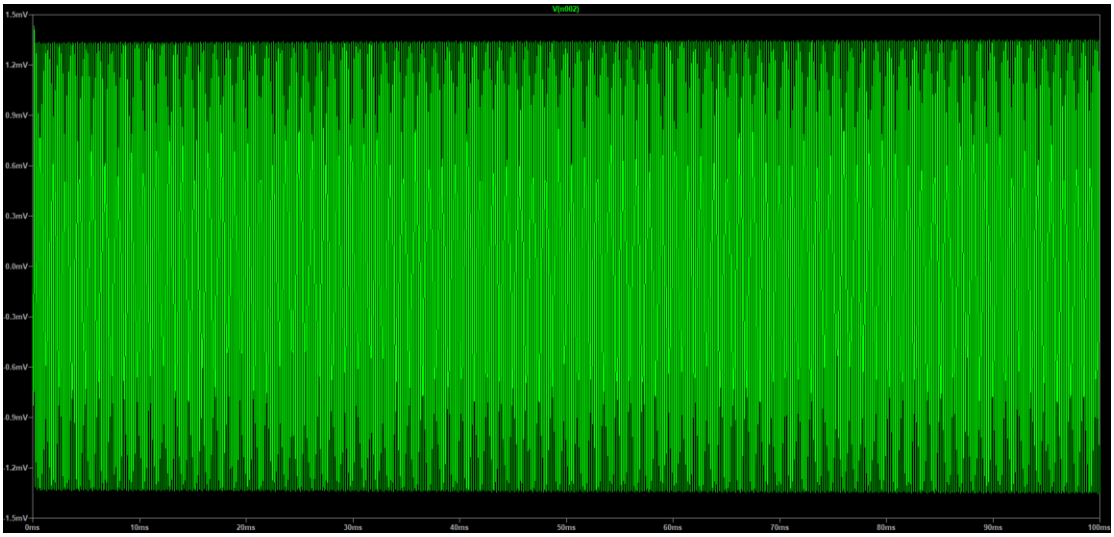
5.



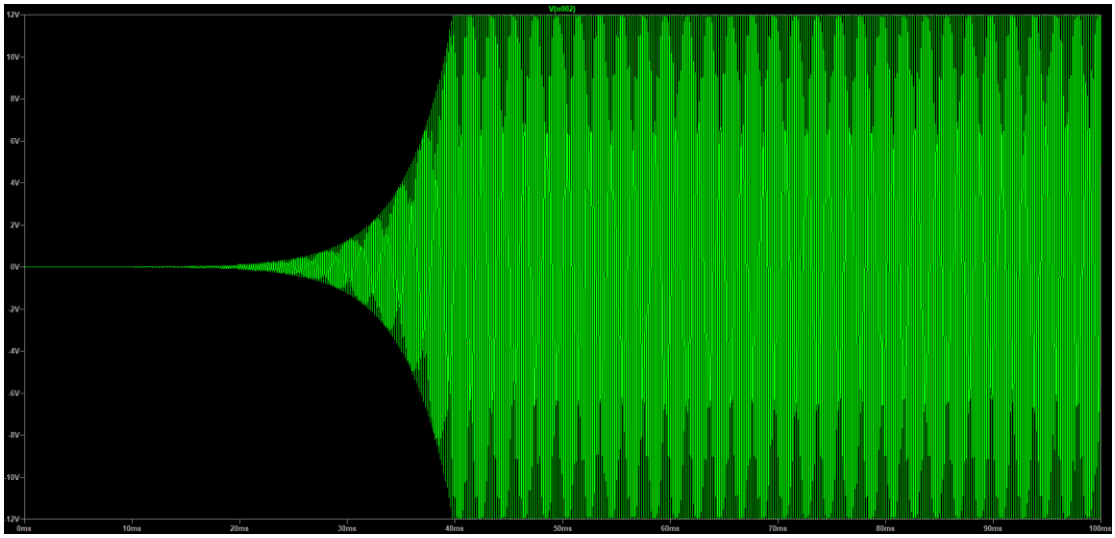
6. $A\beta < 1$



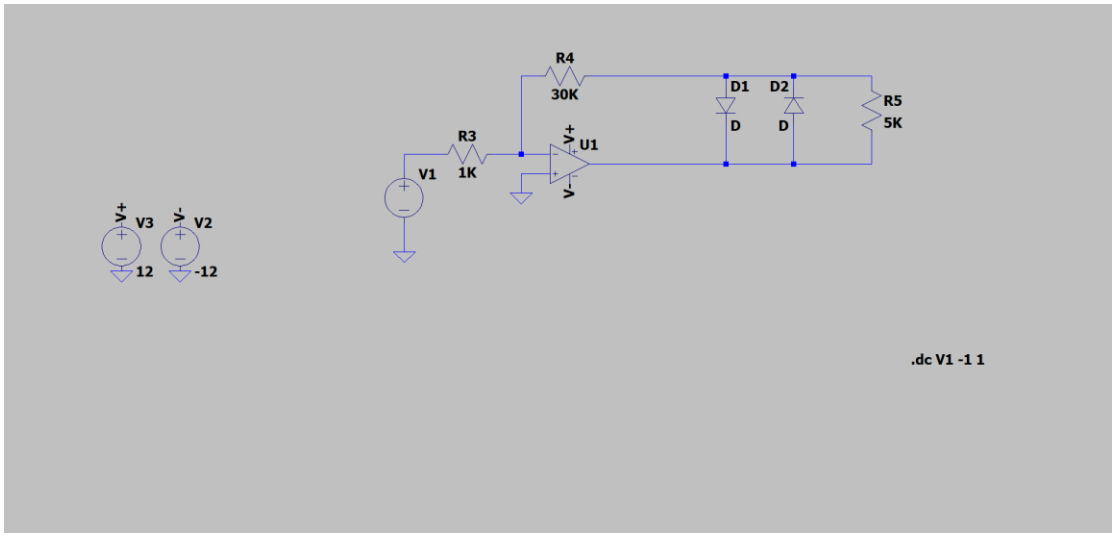
$A\beta = 1$



$A\beta > 1$



7.



8. On peut trouver que le gain est environ -33