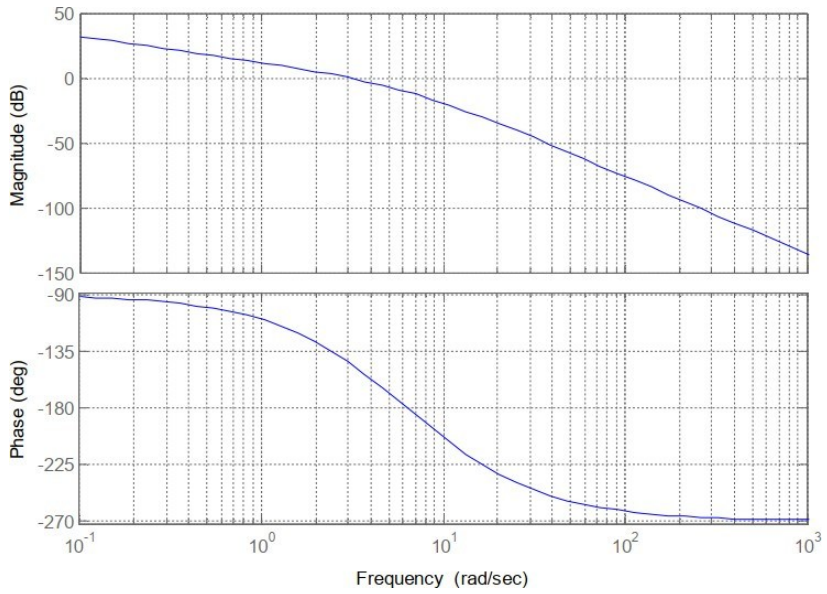
Badji Mokhtar-Annaba University
Department of Electronics
3rd Year License in Automatique (S5)

**TD 2**

Linear Systems Control (LSC)

## Exercise 1:

The Bode diagram of the system is given by:




1- Is the system stable?
2- Give the corresponding gain and phase margins.

**Exercise 2:**

We consider a transfer function system:

$$\boldsymbol{G(p) = \frac{2 \times 10^6}{(p+100)^3}}$$

- Calculate the gain and phase margins for this system.

**Exercise 3:**

We consider a transfer function system:

$$G(p) = \frac{K}{p(p+100)^2} \quad \text{with } K > 0$$

- Determine the conditions on the value of $\boldsymbol{K}$ so that the system is characterized in a closed loop with unity feedback by a phase margin $\Delta\boldsymbol{\varphi} \geq \mathbf{45}°$ and a gain margin $\Delta\boldsymbol{G} \geq \mathbf{6}\ \boldsymbol{db}$.

**Exercise 4 :**

We want to have a phase margin of $\mathbf{45}°$, find the value of K.