Handout on Feedback Stability

Given a basic amplifier that is composed of two stages, which have the characteristics given in the following table:

	Stage 1 (Input)	Stage 2 (Output)
Impedandia de Entrada	$\rightarrow \infty$	$3\,M\Omega$
Gain [f in MHz]	$\dfrac{j\,f10^{6}}{(1+j\,f\,10^{9})(1+j\,f)}$	$\dfrac{10^{6}}{(1+j\,f\,0.1)^{2}}$
Output Impedance	$3\,M\Omega$	$\rightarrow 0$

Obtain the expression for the transfer function of the amplifier

Plot the Bode diagram in Amplitude and Phase.

Which is the maximum β that we can use to maintain the amplifier stable?

In the case that we want to be able to use this amplifier in a voltage follower configuration, please state if we need to introduce any compensation. In case that it is needed, indicate the location for the dominant pole to achieve a gain margin of 10dB.