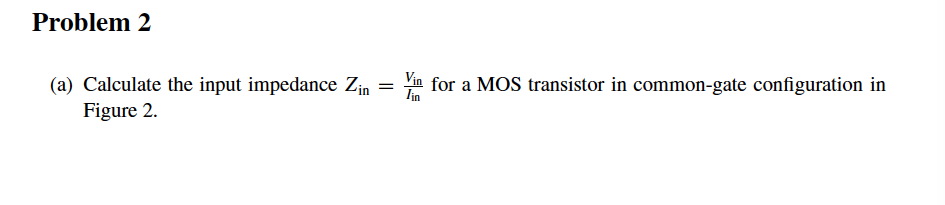
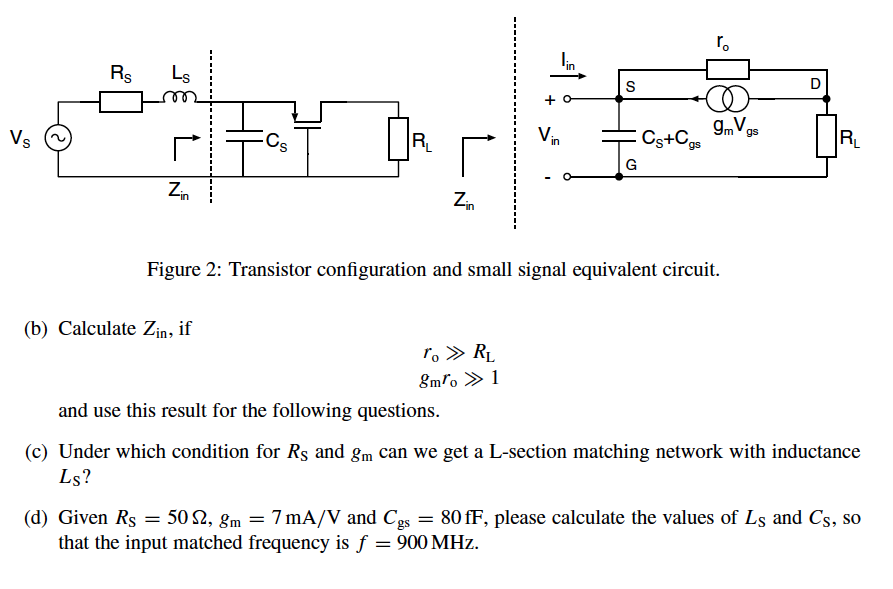


1. Calculate the noise figure of the circuit in Figure 1. Assume that the amplifier is noiseless.
2. Calculate again the noise figure, if the input impedance Zir, is matched to Rs and the amplifier is no more noiseless, but with an output noise current of:



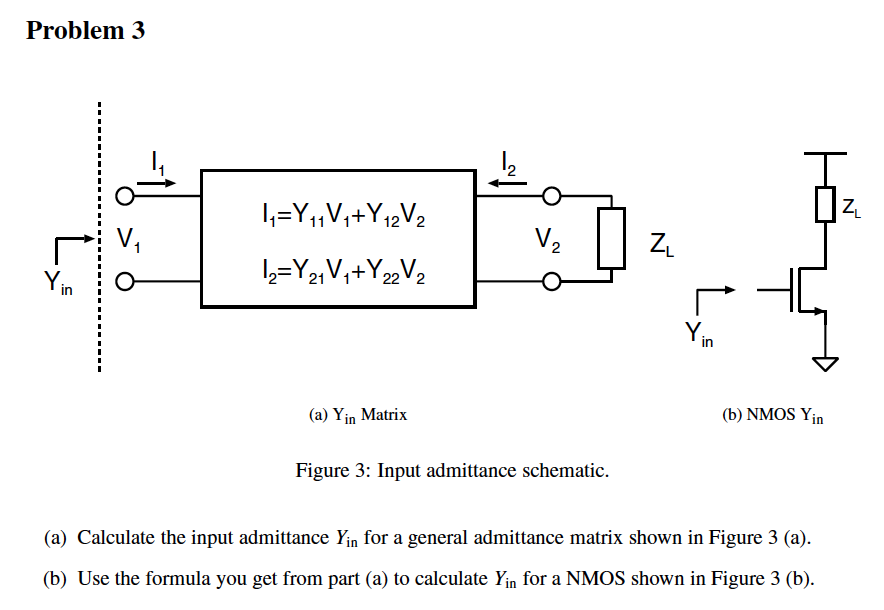
(a) Calculate the input impedance Zin =fNfor a MOS transistor in common-gate configuration in Figure 2.



1. Calculate *Zoi,* if

and use this result for the following questions.

1. Under which condition for Rs and *gm* can we get a L-section matching network with inductance *Ls?*
2. Given please calculate the values of Ls and Cs, so that the input matched frequency is *f =* 900 MHz.



1. Calculate the input admittance Yu, for a general admittance matrix shown in Figure 3 (a).
2. Use the formula you get from part (a) to calculate Yir, for a NMOS shown in Figure 3 (b).