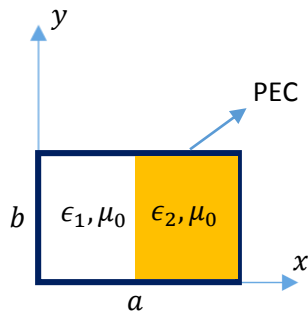HW 3

1) In Homework-2 assume $Z = 50\ \Omega$, $r = 5\ cm$ and then plot $\omega - \beta$ diagram:
   - Using matlab
   - Using HFSS or CST

   Then compare the results by plotting them into the same figure.

2)

Consider the rectangular waveguide given in the figure. The borders are made of PEC. Derive the dispersion relation for LSM modes by using:

   - Vector potential method
   - Transverse resonance technique

3) In question 2, assume $a = 5\ cm$, $b = 10\ cm$, $\epsilon_1 = 2\epsilon_0$, $\epsilon_1 = 3\epsilon_0$ and then plot $\omega - \beta$ diagram:
   - Using matlab
   - Using HFSS or CST

   Then compare the results by plotting them into the same figure.