Homework 4: Impedance maxima of a compound horn

It is given an open conical horn with apex at x=0, with a throat of radius 5 cm at x_1=0.5 m and 10 cm at x_2=1 m.

The sound speed in air is 340 m/s. The horn is linked to a cylinder of length 0.5 m.

Question 1: Determine the frequencies of the maxima of the cylindrical pipe only, considering the presence of the radiation load.

Question 2: Consider now the compound horn. Determine the frequencies of the first four maxima of the input impedance.

Question 3: Determine the frequencies of the first four minima of the input impedance.

Question 4: Plot the impedance function in the range [0Hz, 4 kHz]

Provide the answer by Dec. 1st.

Difficulty coefficient for this homework: 3.0