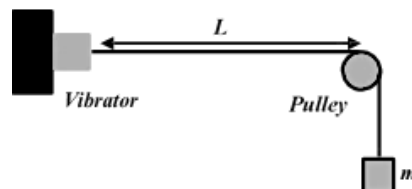


Name _____ Instructor name _____

You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.

1. The system to be studied is shown in the figure; a horizontal string passes over a pulley, and a mass hangs vertically from the string. (a) If the mass is at rest, and the pulley's mass can be neglected, find the tension in the string. (b) If the vibrator is turned on, a wave will travel along the string. Write down the equation for the velocity of a wave in terms of the wave's wavelength and frequency. (6 pts)



2. A cord 13.70 m long has a mass of 2.680 grams . (a) What is the linear mass density of this cord in kg/m ? (b) For the same cord, if the tension were provided by a 1.650 kg mass, how long would the cord have to be in order to vibrate with three antinodes? Assume $f = 135.0\text{ Hz}$. (10 pts)

3. When standing waves are produced in this experiment, does increasing the tension produce a larger or smaller number of antinodes along the string? Support your answer using the relevant equation(s). (4 pts)