

PHYS 2601 (Fall 2025): Problem Set 7

Due date: November 2, 9:00am. 50% penalty on late homework.

From Vibrations and Waves (King)

Problem 6.2 (5 pts)

Problem 6.3 (5 pts)

Problem 6.5 (5 pts)

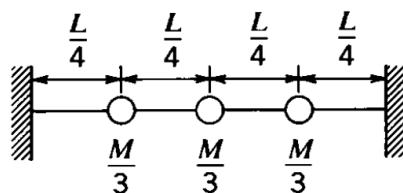
Problem 6.10 (5 pts)

Problem 6.15 (5 pts)

From Vibrations and Waves (French)

Problem 6-2 (10 pts)

6-2 A string of length L and total mass M is stretched to a tension T . What are the frequencies of the three lowest normal modes of oscillation of the string for transverse oscillations? Compare these frequencies with the three normal mode frequencies of three masses each of mass $M/3$ spaced at equal intervals on a massless string of tension T and total length L .



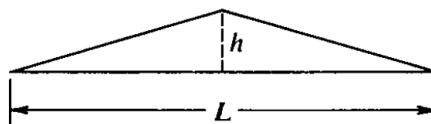
Problem 6-12 (10 pts)

6-12 A string of length L , which is clamped at both ends and has a tension T , is pulled aside a distance h at its center and released.

(a) What is the energy of the subsequent oscillations?

(b) How often will the shape shown in the figure reappear?

(Assume that the tension remains unchanged by the small increase of length caused by the transverse displacements.) [Hint: In part (a), consider the work done against the tension in giving the string its initial deformation.]



In your solutions, please provide written comments (in addition to the math) that show your reasoning to receive full credit.

Please submit solutions electronically as a single merged pdf document to gradescope (handwritten or typeset) and tag all problems, otherwise a penalty will be applied.