

PHYS 2022 - Homework 6
Due Wednesday, March 3, 2010.

Reading:

French: pp. 119-127, 151-153, 161-170

Problems:

1. An oscillator performs a steady state motion $x(t)=X_0\sin(\omega t)$, and the driving force is $F=F_0\cos(\omega t)$, where X_0 and F_0 are constants. What is the damping coefficient for this oscillator? The mass of the oscillator is m .
2. A rod of mass m , length l , and cross-section S is being pulled horizontally by one end, so that its acceleration is a . The Young modulus is Y . There are no oscillations within the rod. By how much did the length of the rod increase?
3. French 5-2
4. French 6-1
5. A string is vibrating in a superposition of the first seven normal modes. A person touches the string with her finger one third of the way from the end. Which harmonics will still be heard?