Music 170 Homework problem set 2 (due Oct. 6)

1. Two 1-g (10^{-3}Kg) masses are connected by a spring whose spring constant is $K = 1\text{Kg/sec}^2$. At what frequency does the system vibrate?

2. A Helmholz resonator vibrates at middle C (261.62 Hz). By what factor should you increase the volume so that it sounds at A (220 Hz.)?

3. How long would you cut a pipe, open at both ends, so that it sounds (i.e., produces a fundamental) at 440 Hz.?

4. Human hearing theoretically works on sinusoids with frequencies ranging from 20 to 20,000 cycles per second. What wavelengths do these limits correspond to?

5. Two sinusoids have periods of 1 msec and 1.5 msec, respectively. What is the period of the sum of the two?