Assignment XIV (LAST ONE!), PHYS 150 (Physics of Sound and Music)
Student Presentations

This homework assignment has material from class lecture as well as from presentations given by your classmates. You may wish to go use the links near this assignment on the course webpage (http://larsenml.people.cofc.edu/phys150_spr14.html) to find materials supplied by your classmates that should aid in solving these problems. If you gave one of the presentations, *you still have the answer the associated questions.* Good luck.

Sonoluminescence

1) What is sonoluminescence?
2) How big (in meters) are these bubbles when they pop?

Acoustics of Big Booms

3) What is the definition of a Mach number?
4) If something moves at 420 m/s in air, what angle does the "Mach cone" have (in degrees).
5) If a plane flies horizontally overhead at a height of 3 km while moving at a speed of 530 m/s, how far past you (horizontally) will the plane have flown when you hear the sonic boom on the ground?

Pipe Organs

6) What is a stop?
7) What is the name to the precursor of modern Pipe Organs that Robert talked about?
8) Robert mentioned verbally that some of the organ pipes can be the size of a pencil eraser. If this can be treated like a normal open tube, what would the approximate frequency of the fundamental resonance be? (Assume the pipe looks just like a pencil eraser, but is an open tube with negligible thickness.