

**Homework 4: Consonance & Dissonance**  
**20 Points: Due at the beginning of class, Thursday, 5 December 2002**

There are two parts to this homework assignment. Each part counts 10 points. Late homework will receive a grade of zero.

**Part 1:**

The ten tones given in the table below have the same intensity (70 dB). Using the principles derived from the Plomp and Levelt experiment (Plomp & Levelt, 1965) which of the five tone pairs would have the maximum amount of dissonance (minimum amount of consonance)? Why? Hint: critical band estimates should be based on 15% of the mean frequency of the two tones.

| Pair | Tone 1 | Tone 2 |
|------|--------|--------|
| 1    | 498 Hz | 502 Hz |
| 2    | 490 Hz | 510 Hz |
| 3    | 481 Hz | 519 Hz |
| 4    | 462 Hz | 538 Hz |
| 5    | 425 Hz | 575 Hz |

**Part 2:**

Which of the tone pairs will sound the loudest? Why?

Plomp, R., & Levelt, W. J. M. (1965). Tonal consonance and critical bandwidth. *Journal of the Acoustical Society of America*, 68, 548-560.