

## Selected Answers to HW #3

Include explanatory text and intermediate calculations in your solutions. **You will not receive credit for merely repeating an answer given here without supporting work.**

If an answer is not provided below, it is either because the solution is trivial or because disclosure of the answer would give away too much of the solution.

It is possible that one or more of the answers given below is incorrect. There is a trade-off between speed and accuracy. The faster that answers are posted to the web site, the more likely that a mistake could have been made in the rush to prepare them.

If you suspect that an answer below is incorrect, please let me know as soon as possible.

1.
  - a. [answer not given]
  - b. [answer not given]
  - c.  $(4^{1/2})^4 = 16$
  - d.  $2^{2.5} = 5.657$
2.
  - a. critical bandwidth = 90 Hz
  - b. critical bandwidth = 150 Hz
  - c. critical bandwidth = 1,500 Hz
3. The upper and lower limits are 1,075 Hz and 925 Hz.
4. Perceived pitch (frequency, actually) = 180 Hz
5. [proof]
6. exposure time/two cycles  $\approx$  2.0 at 100 Hz and 3.5 at 500 Hz
7. The first partial is 1,560 Hz. [The next two partials are not given.]
8. The “fused” frequency is 504 Hz. The beat frequency is 8.0 Hz.