

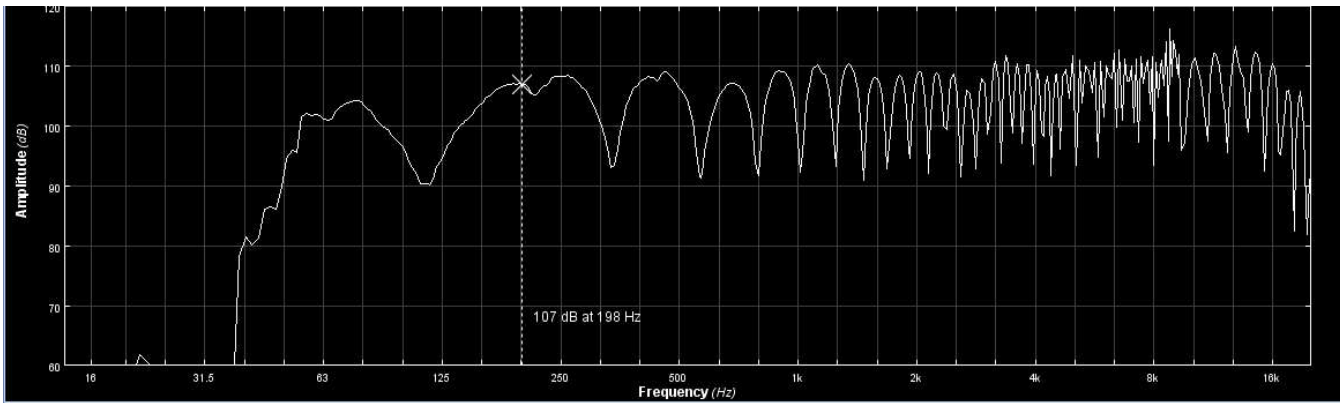
Name:

Date:

FSE – Quiz 1 Makeup

Scenario:

You have two speakers separated by an unknown distance. You measure the following frequency response:



The lowest frequency to experience a 180-degree phase offset is 100 Hz.

Questions:

- 1) How far apart are the two speakers? (2 pts)
- 2) How long does it take the sound to traverse the distance between the speakers? (2 pts)
- 3) The dips caused by the 180-degree phase offsets in the response chart are 200 Hz. apart. Why do the dips on the right side of the chart appear closer together than they do on the left side? (2 pts).
- 4) If two sound sources must be closer than $\frac{1}{4}$ inch in order to have no audible comb filtering, what are some implications of this for microphone and loudspeaker placement/design? (4 pts) We haven't covered any of this yet, so you'll need to do some reading ahead or outside of the text if you can't think of it right away. Hint: a separation of $\frac{1}{4}$ inch only affects very high frequencies, while lower frequencies will be completely unaffected by this amount of separation or delay.