Worksheet 27 interference **Name**
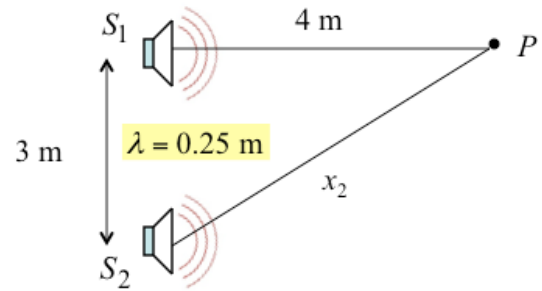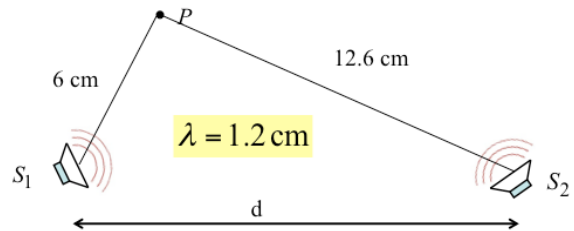
Relevant textbook sections covered: 21.5 - 21.7

1. Sources out of phase $\phi_{10} - \phi_{20} = \pi$. What is the interference at Point P, constructive, destructive, or somewhere in between?

S_1 4 m P

3 m $\lambda = 0.25$ m

x_2

S_2

2. Sources in phase $\phi_{10} - \phi_{20} = 0$. What is the interference at Point P, constructive, destructive, or somewhere in between?

P 12.6 cm

6 cm

$\lambda = 1.2$ cm

S_1 S_2

d

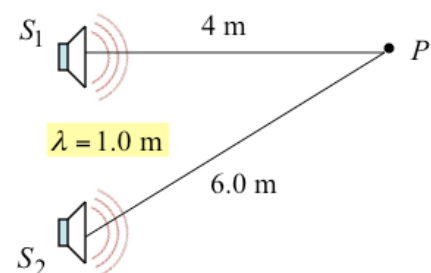3. Sources out of phase $\phi_{10} - \phi_{20} = \pi$. What is the interference at Point P, constructive, destructive, or somewhere in between?

S_1 4 m P
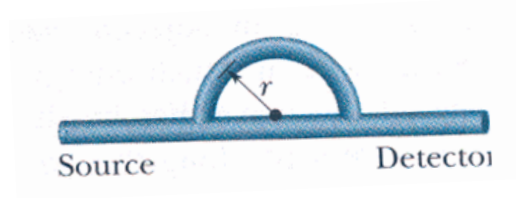
$\lambda = 1.0$ m

6.0 m

S_2

4. Sound waves of 40.0 cm wavelength enter the tube shown in the figure. What must be the smallest radius r so that a minimum in the sound level will be heard at the detector at the other end of the tube? What is the minimum r for which you would hear maximum sound (excluding 0)?

Source   Detector

Good practice: You are standing 2.5 m directly in front of one of the two speakers shown in the figure. The speakers are 3.0 m apart and both are playing a 686 Hz tone in phase. As you begin to walk directly away from the speaker, at what distances from the speaker do you hear a minimum sound intensity?

Walk

2.5 m

3.0 m