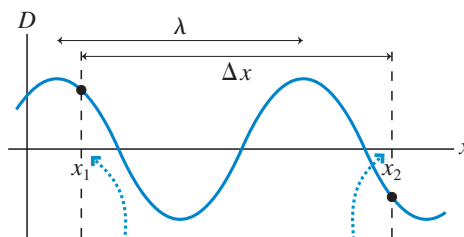


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Physics 2C, Winter 2020

Reading Assignment due Tuesday 1/14: Submit via Gradescope by 11:30am

1. Answer the following questions comparing sound and EM waves:
 - (a) If you have an audible sound wave and an EM wave, which of the following three options is the most likely?
 - i. They have the same wave speed.
 - ii. They have the same wavelength.
 - iii. They have the same frequency.
 - (b) For your answer in part (a), give an approximate numerical value (for example, if you said the speed is probably the same, give a rough numerical value for the wave speed). For the EM wave, what part of the EM spectrum does this wave belong to?
2. Look at Figure 16.27 from the textbook:

FIGURE 16.27 The phase difference between two points on a wave.



- (a) What is the approximate *phase difference* between x_1 and x_2 ?
 - (b) The snapshot graph above can be described by the equation $D(x) = A \cos(kx + \phi_0)$, where $|\phi_0| \approx \pi/4$. Is ϕ_0 positive or negative? Explain how you know in simple terms (as though were teaching math to a high school student).
3. Suppose that a single guitar player makes noise at 70 dB.
 - (a) If two guitar players play at the same time, what is the noise level in dB? What is the sound intensity in W/m^2 ?
 - (b) How many guitar players would have to play in order for the sound intensity to be 100 dB?

For extra practice (not due): From Chapter 16 of Knight, 4th edition: Conceptual Questions: 8-10. Exercises: 20, 22, 25, 26, 29-32, 34, 35.