Homework assignment

Due Monday, Feb 4th 2019.

Problems

Question 1: Wave propagates from one media to another

A sound wave of 1 kHz frequency travels in the air and then enters the water. Assume we are at room temperature and sea-level atmosphere pressure.

(a) What is the wavelength of the sound wave in the air?

(b) What is the speed of sound wave in water?

(c) When the sound wave enters water, does its frequency change? If no, explain why. If yes, what is the frequency?

(d) When the sound wave enters water, does its wavelength change? If no, explain why. If yes, what is the wavelength?

Question 2

A wave has a form of: $A(x, y, t) = A_o cos(\omega t + x - 2y)$.

(a) What is the propagation direction of the wave in the x-y plane?

(b) If the frequency of the wave is $\omega/2\pi = f = 5$ Hz, what is the speed of the wave?