UNIT 13 EXERCISES

1) An airplane flies horizontally at a constant speed, piloted by rescuers who are searching for a disabled boat. When the plane is directly above the boat, the boat's crew blows a loud horn. By the time plane's sound detector receives the horn's sound, the plane has traveled a distance equal to one-half its altitude above the ocean. If it takes the sound 2.00s to reach the plane and, determine

a) the speed of the plane

b) and its altitude. Take the speed of sound to be 343m/s.

2) A sound wave in air has a pressure amplitude equal to 4.00×10^{-3} Pa. Calculate the displacement amplitude of the wave at a frequency of 10.0Hz.

3) Write an expression that describes the pressure variation as a function of position and time for sinusoidal sound wave in air, if $\lambda = 0.100m$ and $\Delta P_{\text{max}} = 0.200Pa$.