

**ME 513 Fall 2017 – Homework No. 4 – Due Nov. 27, 2017 (off-site students, e-mailed before midnight Nov. 27)**

From Kinsler, Frey, Koppens and Sanders:

6.2.2 – note that there are two possible solutions

6.2.3 (a) and (b) only

6.2.6C

6.3.4

6.6.3C

**Additional Problem:**

- (i) Derive an expression for the surface normal impedance (at normal incidence) of a fluid layer of depth  $L$  (having density  $\rho_1$  and speed of sound  $c_1$ ) above a perfectly hard backing.
- (ii) Sketch the impedance.
- (iii) Calculate the plane wave pressure reflection coefficient for this layer (the ambient density outside the layer is  $\rho_0$  and the ambient sound speed is  $c$ ) and show that the magnitude of the reflection coefficient is always equal to unity in this case.