Quiz #2 Ch17

Name: ID#: Sec#:

Q1 As truck approaching a stationary sound source with speed of 40.0 m/s, the driver hear a frequency of 118.2 Hz. After the truck passes the source the driver, hear a frequency of 88.2 Hz. What is speed of sound?

$$v\_{d}$$

$$f\_{L}^{'}$$

$$v\_{d}$$

$$f\_{R}^{'}$$

$f\_{L}^{'}=\frac{v+v\_{D}}{v}f=118.2$ …………………. (1)

$f\_{R}^{'}=\frac{v-v\_{D}}{v}f=88.2$ ………..…………. (2)

 By dividing eqn. (1) by eqn. (2) we get

$$\frac{118.2}{88.2}=\frac{v+v\_{D}}{v-v\_{D}}$$

$$1.34=\frac{v+v\_{D}}{v-v\_{D}}$$

$$1.34v-1.34v\_{D}=v+v\_{D}$$

$0.34v=2.34v\_{D}⇒ v=\frac{2.34}{0.34} v\_{D}=\frac{2.34}{0.34}×40=275.3 m/s$

 (This is not a real answer. Actually, I did my calculation assuming the truck speed=50 m/s)