

2. We denote the speed of light $c = 3.0 \times 10^8$ m/s. The time t_1 it takes for you to hear the music is $t_1 = D_1/v_s = (300 \text{ m})/(343 \text{ m/s}) = 0.87 \text{ s}$. The time t_2 it takes for a listener 5000 km away to hear the music is $t_2 = D_2/c = 5000 \text{ km}/(3 \times 10^5 \text{ km/s}) = 0.02 \text{ s}$. So the listener 5000 km away actually hears the music first! The time difference is $\Delta t = t_1 - t_2 = 0.87 \text{ s} - 0.02 \text{ s} = 0.85 \text{ s}$.