Homework of General Physics III

December 4, 2024

1. Two simple pendulums have lengths of 81 cm and 64 em. They are released from the same angular position at the same instant. After how much time will they both arrive at their initial positions simultaneously?

2. An earthquake generates two types of seismic waves that propagate through the earth. The P waves have a characteristic speed of 8 km/s, whereas the S waves travel at 5 km/s. At an observation post these waves are detected with a time interval of 1.8 min. Assuming that the waves traveled in a straight line, how far away did the quake occur?

3. A wave traveling in the $-x$ direction has a frequency of 40 Hz, a wavelength of 3 cm, and an amplitude of 0.6 cm. Write the wavefunction $y(x,t)$ given that $y = 0.6\,\text{cm}$ at $x = 0$ and $t = 0$.