Ph202H/212H
W09   Homework – due February 12, 2009

1. The equation of a transverse wave traveling along a string is

$$y(x,t) = (2.30\,\text{mm})\sin(1822x - 588t)$$

where x is measured in meters and t in seconds. Find (a) the amplitude, (b) the frequency, (c) the wavelength, (d) the wave speed, and (e) the maximum transverse speed of a particle of the string.

2. The speed of a wave on a string is 172 m/s when the tension is 123 N. To what value must the tension be increased to raise the wave speed to 180 m/s?

Answer: 135 N

3. What are the three lowest frequencies for standing waves on a wire 9.88 m long having a mass of 0.107 kg, which is stretched under a tension of 236 N?

Answer: …, 14.9 Hz, …