PH351 – Monday, Nov. 14.

- **Midterm exam II, Friday Nov. 18**
- **Homework 8 follows (not to turn in).** Please keep in mind that a problem like one of the following may appear on an exam!

1 A long string has linear density of $\mu = 0.1$ kg/m and a tension T = 40 N. A pulse is generated on the string by moving the left end up at a constant speed of $v_1 = 10$ m/s for a time $\tau_1 = 5$ ms, then holding the end at rest for a time $\tau_2 = 5$ ms and finally moving the end down at a constant speed of $v_3 = 10$ m/s for a time $\tau_3 = 5$ ms, thus returning the end to its original position. Draw a diagram showing the shape of the resulting right moving pulse at one particular instant. Draw another diagram showing a graph of the vertical velocity of points along the string at this instant.

2 A string stretched along the z axis has linear density of $\mu_L = 0.1$ kg/m to the left of z = 0 and a linear density of $\mu_R = 0.2$ kg/m to the right of z = 0. The string is stretched to a tension T = 40 N. A right moving pulse with the shape indicated in the figure is approaching the junction between the parts with different densities. In the drawing, the vertical scale is exaggerated by a factor ten to make it easier to see. The pulse is 1 mm high and 1 cm long. The thin horizontal line is just the z axis, drawn to guide the eye. Draw what happens to the pulse at an instant after the pulse has come to the junction. The situation is a little complicated while the pulse is in the process of arriving at the junction, so make your drawing for a later time, when the situation is simple. Label distances on your drawing to make it quantitative.