Homework #6

1. Problems 2.75 ***and*** 2.76 in 7/E and 6/E (i.e. 2.50 and 2. 51 in 5/E and Answer Sheet)

2.50 Generate a bounce diagram for the voltage $V(z, t)$ for a 1-m-long lossless line characterized by $Z_0 = 50\ \Omega$ and $u_p = 2c/3$ (where c is the velocity of light) if the line is fed by a step voltage applied at $t = 0$ by a generator circuit with $V_g = 60$ V and $R_g = 100\ \Omega$. The line is terminated in a load $Z_L = 25\ \Omega$. Use the bounce diagram to plot $V(t)$ at a point midway along the length of the line from $t = 0$ to $t = 25$ ns.

2.51 Repeat Problem 2.50 for the current I on the line.

2. Problem 2.78 in 7/E and 6/E (i.e. 2. 53 in 5/E)

2.53* In response to a step voltage, the voltage waveform shown in Fig. 2-46 was observed at the sending end of a shorted line with $Z_0 = 50\ \Omega$ and $\varepsilon_r = 4$. Determine V_g, R_g, and the line length.

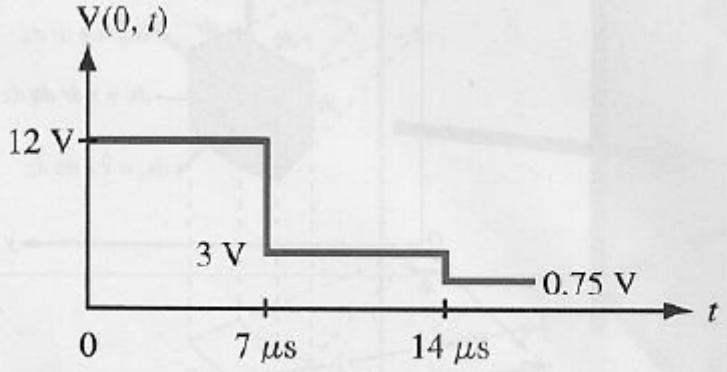

Figure 2-46: Voltage waveform of Problem 2.53.

You need to pay special attention to this problem. This problem is about the sending end. In Test I, you will be tested about the sending or receiving end. You need to appreciate how the sending end and the receiving end are different from other points along the line when it comes to using the bounce diagram.