P8110: Applied Regression II
Homework #1 [10 points]

NOTE: Please do all the calculations by hand for this assignment. SHOW ALL WORK.

1. Listed below are values of survival time in years for 10 patients from the WHAS100 study. Some event data were changed to censored data for homework practice. The censored observations are denoted by a "+" as a superscript.
   $0.4, 1.2, 1.2^+, 3.4^+, 4.3, 5.0, 5.0, 5.0^+, 6.1^+, 7.1$

   (a) Using Kaplan-Meier method to estimate the survival function for these 10 patients (show a table with 7 columns: j, t_j, time interval, n_j, d_j, $p_j = 1 - \frac{d_j}{n_j}$, and $\hat{S}(t)$). [4 points]

   (b) Sketch the K-M survival curve by hand. [2 points]

   (c) Give an estimate of the five-year survival rate. Provide its 95% confidence interval (show all the three steps of results to get full credits). Interpret both the estimate and the 95% CI. [4 points]