BIOSTAT M215 / G. LI

HW 1 (Due 1/23/2024 Thursday, 9:00 AM)

Reading assignment: (Klein and Moeschberger) Chapters 1; Chapter 2: 2.1-2.5; Chapter 3: 3.1-3.5; Appendix A, B
Exercises from the textbook: 2.1, 2.4, 2.11, 2.18, 3.1, 3.2, 3.4

Additional questions for Exercise 3.4

(a) Estimate $S(12) = P(X > 12)$, the probability that a 6-MP patient will be relapse free for more than 12 months, with a 95% confidence interval.

(b) Instead of the exponential distribution assumption, assume that the time to relapse for 6-MP patients follows a log-normal distribution. Find the maximum likelihood estimate of the unknown parameters and repeat question 1.

(c) Using the exponential AFT model to test if 6-MP is effective in prolonging remission duration in comparison with the placebo group at $\alpha = 0.05$. Be specific about the model and hypotheses, and find the p-value.

(d) Repeat part (c) using the Weibull AFT model. Do you observe any differences between the results from the two models? If so, try to explain why they are different?