STAT 463: Homework 9

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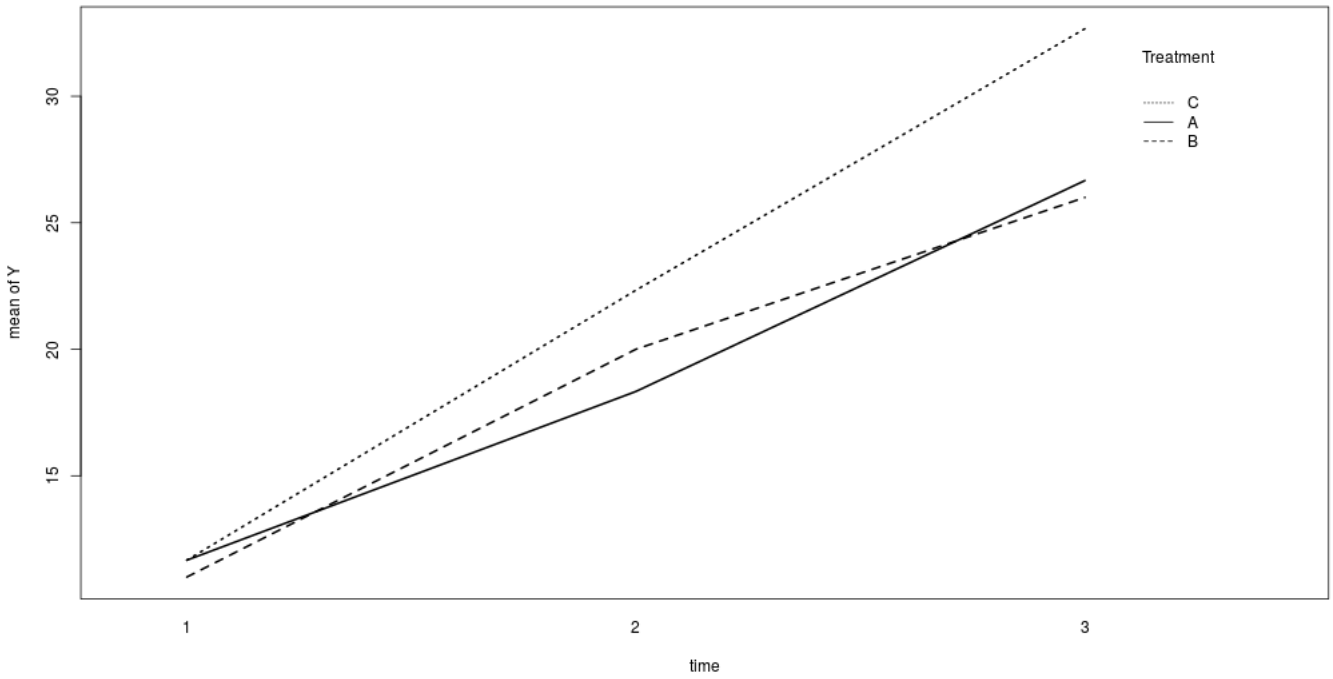
PROBLEM 1

a)

Based on the following interaction plot, it appears that treatment C is completely independent of treatments A and B. However, A and B appear to have interactions at approximately t=1.4 and t=2.6. The means of Y for each treatment method increase over time.



b)

According to the ANOVA of all 4 models, the Compound Symmetry model appears to have the best AIC and BIC values, indicating that it is the best model. However, the AR(1) model is close behind.

	Model	df	AIC	BIC	logLik	Test	L.Ratio	p−value
fit_compsym	1	11	92.87591	102.6700	−35.43796			
fit_nostruct	2	15	92.98019	106.3358	−31.49009	1 vs 2	7.895721	0.0955
fit_ar1	3	11	93.87384	103.6679	−35.93692	2 vs 3	8.893655	0.0638
fit_ar1het	4	13	97.05593	108.6308	−35.52797	3 vs 4	0.817914	0.6643

c)

From the ANOVA of the Compound Symmetry model, we can see the F-test values for the intercept, treatment, time, and interaction between treatment types and time. As one can see, all of the p-values appeart to be fairly significant, with the treatment alone being the least significant at a p-value of 0.0052. However, the most significant factors are simply time and the intercept, possibly indicating that all of the treatment methods are ineffective.

Denom. DF: 18

	numDF	F−value	p−value
(Intercept)	1	2399.0246	<.0001
factor(trt)	2	7.1393	0.0052
factor(time)	2	605.6207	<.0001
factor(trt):factor(time)	4	9.6552	0.0002