Homework #7 Thomas Dolan

7.8

> prop <- read.table(file.choose(), header=F)

> names(prop) <- c("age","operating\_cost","vacancy\_rates","total\_sq\_footage","rental\_rates")

> reduced <- lm(prop$rental\_rates ~ prop$age + prop$total\_sq\_footage, data = prop)

> full <- lm(prop$rental\_rates ~ prop$age + prop$operating\_cost + prop$vacancy\_rates + prop$total\_sq\_footage, data = prop)

> anova(reduced)

> anova(full)

> anova(reduced,full)

> anova(reduced)$"Sum Sq"[3]-anova(full)$"Sum Sq"[5]

> anova(full)$"Sum Sq"[5]

> 2\*(1-pt(sqrt(sum(full$res^2)),76))

H0: β2 = β3 = 0, Ha: not both β2 and β3 = 0, SSR(X2,X3|X1,X4) = 206400176076, SSE(X1,X2,X3,X4)= 471056800140, F\* = (206400176076/2)/(471056800140/76) = 16.6502, F(.99;2,76)= 7.077, If F∗≤16.6502 conclude H0, otherwise Ha. Conclude H0. P-value = 0

7.10

> beta1 <- -1

> beta2 <- .4

> new\_red <- lm(beta1 + beta2 +prop$rental\_rates ~ prop$total\_sq\_footage + prop$total\_sq\_footage, data = prop)

> anova(new\_red)

> anova(new\_red,full)

> anova(new\_red)$"Sum Sq"[2]

H0:β1=−1.0,β2=0.4;Ha: not both equalities hold. Full model: Yi=β0+β1Xi1+β2Xi2+β3Xi3+ β4Xi4+εi, Reduced model: Yi= β0-Xi1+0.4Xi2+β3Xi3+ β4Xi4+εi, SSE(F) = 471056800140, df(F)=76, SSE(R)= 946019115212, df(R)= 78, F=((946019115212-471056800140)/2)/(471056800140/76) = 38.315 , (F(.99;2,76)= 7.077, If F∗≤16.6502 conclude H0, otherwise Ha. Conclude Ha.