

## Stat 328 Lab #6 Summer 2005

1. Do Exercises **13.1, 13.3, 13.5** (For this problem make up/enter by hand your own three dummy variables, X1 coding 1-0 for the first quarter, X2 coding 1-0 for the second quarter, and X3 coding 1-0 for the third quarter), **13.7** (For this problem, you can get JMP to store the predictions for 13.3 and then make up a new column of 24 ratios of sales to fitted sales. It's probably quickest to then get the 4 averages needed in part a) here using a pocket calculator.), **13.11, 13.12, 13.13, 13.17, 13.18** (For Exercises 13.17 and 13.18 you can get JMP to save residuals. Then make a new column from the column of saved residuals, employing New Property>Formula and "Lag" under the "Row" group of functions.)
2. For the situation of Exercise 13.18 regress residuals on the lag 1 residuals. This gives you a way to predict a residual from the previous one. Save the predictions of residuals from the lag 1 residuals and then add them to the predictions of sales based on the trend-and-season model. Are these fitted values better than the ones you got in 13.5? Adjust your forecast for the first quarter of 2002 (made in problem 13.12) based on a prediction of the residual for the trend-and-season model for this period. (You should add to your first prediction in Exercise 13.12 a prediction of the first 2002 residual based on the last residual in the data set.)
3. Compute ("by hand") ordinary moving averages for periods 4-8 of the JC Penney data using a span of 4. Then compute (again "by hand") exponentially weighted moving averages with weight  $w = .5$  for periods 1-8. (Take  $\tilde{y}_1 = y_1 = 4452$ . You can then compute for periods 2 through 8.)
4. Use JMP to compute and plot 2 different spline smoothers for the JC Penney data. Plot one with a small stiffness and one with a big stiffness.