

1. Problem 2 of Chapter 13. (p.203)
2. Problem 4 of Chapter 13 (p. 203) (Hint: See the way of column exchanges in the proof of Theorem 13.2.7 and Theorem 13.5.8 we proved in class, i.e.,

$$\begin{vmatrix} \mathbf{T} & \mathbf{U} \\ \mathbf{V} & \mathbf{W} \end{vmatrix} = |\mathbf{T}| |\mathbf{W} - \mathbf{V}\mathbf{T}^{-1}\mathbf{U}|$$

3. Let $\mathbf{A}_{n \times m}$ and $\mathbf{B}_{m \times n}$ be two square matrices. Show that $|\mathbf{I} + \mathbf{AB}| = |\mathbf{I} + \mathbf{BA}|$. (Hint: you may use the idea of the previous exercise.)
4. Problem 12 of Chapter 13 (p.204).

SAS Exercises:

The dataset is stored at: <http://www.stat.ufl.edu/~yang/STA6329/datasets.htm>

This is supposed to be the dataset you get from your client. You need to read the descriptions, but should not modify them in any way.

5. 1. Refer to the datasets **HOCKEY** data. Write a SAS program which calculates the number of games won, lost, and tied up to and including the current observation. Print the dataset with an appropriate format for the date. Don't forget to change the score of the final game to Boston College 5, Ohio State 2. The first few lines of output should be similar to this:

DATE	TEAM	CITY	STATE	OSU	OPP	W	L	T
10/10/97	Toronto	Columbus	Ohio	5	0	1	0	0
10/18/97	Miami	Oxford	Ohio	0	3	1	1	0
10/24/97	Merrimack	Columbus	Ohio	2	7	1	2	0
10/26/97	Merrimack	Columbus	Ohio	5	3	2	2	0
10/31/97	Clarkson	Potsdam	New York	1	1	2	2	1

6. In statistical analyses, it is important to consider the impact that outliers may have on the results. In the book *Statistical Methods for Social Sciences, Third Edition* by Alan Agresti and Barbara Finlay (Prentice Hall, Upper Saddle River, NJ, 1997), an outlier is defined as an observation which either exceeds $Q3 + (1.5(Q3-Q1))$ or is less than $Q1 - (1.5(Q3-Q1))$, where $Q1$ and $Q3$ refer to the first and third quartiles, respectively.

Refer to the **USED CARS** data. Using the definition above, analyze the prices of the cars and create a new variable which has a value of 1 if the observation is an outlier, 0 otherwise.

Print the year, manufacturer, model, price, and the new indicator variable for outliers. (You would need to perform these steps if you wanted to delete the outliers from further analyses.)

The notation for Q1 and Q3 in UNIVARIATE OUTPUT are q1 and q3.

Hint: The first few line outputs look like:

Obs	year	manufact	model	price	outlier
1	83	Oldsmobile	Cutlass	1950	0
2	94	Chrysler	LeBaron	7999	0
3	96	Buick	LeSabre	16900	0
4	93	Pontiac	Grand Am	5485	0
5	85	Pontiac	Grand Am	1750	0
6	90	Mazda	626	4998	0
7	97	Plymouth	Breeze	10998	0
8	92	Geo	Storm	4450	0
9	92	Geo	Prizm	4995	0
10	93	Cadillac	Allante	28950	1
11	97	Honda	Accord	16965	0