Math 588 Quiz 5 Fall 2012 Name_____

1) What is the start for the median ball estimator?

(MED(W), I)

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2) The output below describes lawyers' ratings of state judges in the US Superior Court with 43 observations on 12 numeric variables: CONT Number of contacts of lawyer with judge, INTG Judicial integrity, DMNR Demeanor, DILG Diligence, CFMG Case flow managing, DECI Prompt decisions, PREP Preparation for trial, FAMI Familiarity with law, ORAL Sound oral rulings, WRIT Sound written rulings, PHYS Physical ability, RTEN Worthy of retention.

```
> rprcomp(USJudgeRatings)
Standard deviations:
 [1] 3.22195231 1.03832823 0.51049711 0.41049221 0.22797980 0.16242562
 [7] 0.11155709 0.09407153 0.07441343 0.05595849 0.04492358 0.03805913

Rotation:
             PC1         PC2
CONT  0.09651014  0.90089601
INTG -0.29727192 -0.19029004
DMNR -0.28269055 -0.21697647
DILG -0.30634676  0.01963176
CFMG -0.29804314  0.19297945
DECI -0.30227359  0.18417871
PREP -0.30428044  0.10879296
FAMI -0.30144067  0.11286037
ORAL -0.30874784  0.05751148
WRIT -0.30769444  0.06085970
PHYS -0.28368257 -0.03718180
RTEN -0.30728474 -0.02411832
```

a) Interpret the first principal component.

an average of the last 11 variables

b) Interpret the second principal component.

the first variable cont

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3) From the SAS output shown below, what is the variance explained by the second principal component?

0.0561

Eigenvalues of the Covariance Matrix

	Eigenvalue	Difference	Proportion	Cumulative
1	154.310607	145.147647	0.9439	0.9439
2	9.162960		0.0561	1.0000

Eigenvectors

	Prin1	Prin2
July	0.343532	0.939141
January	0.939141	-.343532

4) The R output below is for a canonical correlation analysis on some iris data. An iris is a flower, and there were 50 observations with 4 variables sepal length, sepal width, petal length and petal width.

a) What is the first canonical correlation $\hat{\rho}_1$? 0.864

b) What is $\hat{\boldsymbol{a}}_1$? $\begin{pmatrix} -0.2230 \\ -0.0069 \end{pmatrix}$

c) What is $\hat{\boldsymbol{b}}_1$? $\begin{pmatrix} -0.2579 \\ -0.0061 \end{pmatrix}$

```
w<-iris3[,,3]
x <- w[,1:2]
y <- w[,3:4]
cancor(x,y)

$cor
[1] 0.8642869 0.4836991

$xcoef
                [,1]       [,2]
Sepal L. -0.223034210 -0.1186117
Sepal W. -0.006920448  0.4980378

$ycoef
                [,1]        [,2]
Petal L. -0.257853414 -0.09094352
Petal W. -0.006108292  0.54939125
```