Math 583 Quiz 9 Fall 2012 Name_____

1) Cranial length and breadth (X_1 and X_2) were measured on $n_1 = 35$ female frogs and $n_2 = 14$ male frogs with $\overline{x}_1 = (22.86, 24.397)^T$ and $\overline{x}_2 = (21.821, 22.442)^T$. Test $\mu_1 = \mu_2$ if $T_0^2 = 2.550$.

i) H_0 $\underline{\mu_1} = \underline{\mu_2}$ H_1 $\underline{\mu_1} \neq \underline{\mu_2}$

ii) $t_0 = \frac{T_0^2}{p} = \frac{2.550}{2} = 1.275$

iii) $pval = P\left(1.275 < F_{2,14-2}\right) > 0.05$

	2
12	3.89

	2
9	.1735
.5	2.81

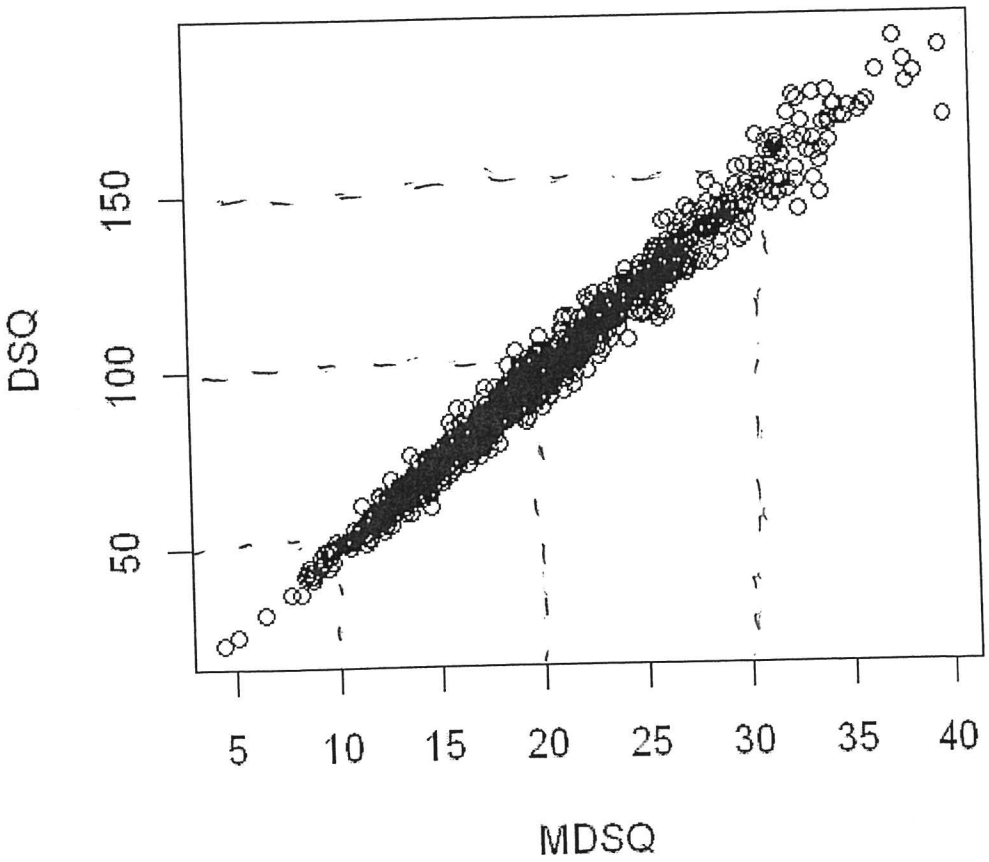
$.1 < pval < .5$

iv) fail to reject H_0; mean length and breadth are the same for F and M frogs.
(or not enough evidence to conclude that the means differ)

50

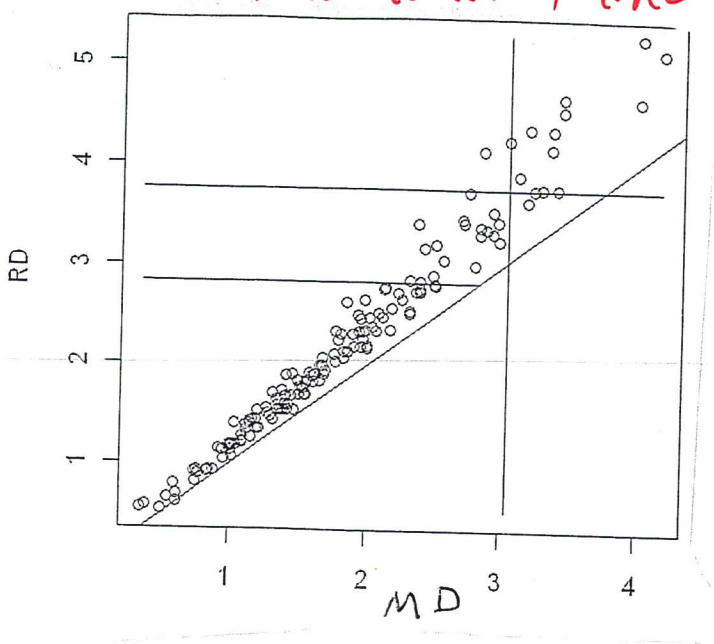
2) In the plot below, $D_i^2(\overline{x}, \boldsymbol{S})$ is plotted versus $D_i^2(\overline{x}, \boldsymbol{I}_p)$ where $n = 1000$ and $p = 20$. This plot suggests that $\boldsymbol{\Sigma_x} = d\boldsymbol{I}_{20}$ where d is the slope of the line about which the plotted points scatter. What is the slope of this line?

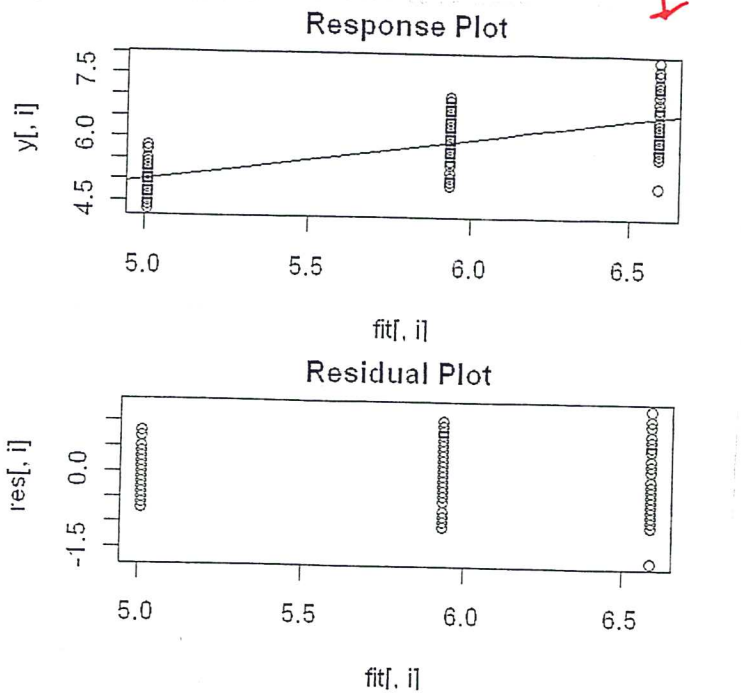
$d = \boxed{5} = \text{slope}$



20

follows a line, but not the identity line





3) The above plots are for a one way MANOVA model with $p = 3$ groups = types of iris. The $m = 4$ variables are $Y_1 =$ *sepal length*, $Y_2 =$ *sepal width*, $Y_3 =$ *petal length* and $Y_4 =$ *petal width*.

a) What does the DD plot suggest about the ϵ_i?

elliptically contoured but not multivariate normal

the sample mean for 3rd dot plot is higher than largest value in 1st dot plot

b) The response and residual plots are for Y_1. Does it look like the mean sepal length for the 3 types of iris are the same?

NO, 3rd dot plot is higher than 1st in response plot

30 −2 if types overlap

+1 for residual plot

do ex's in class