Biology 4605 / 7220 Name _____Key_____
Quiz #4b 8 October 2003

1. Draw a residual versus fit plot for the following situations.

a). Straight line assumption valid

no bowls
no arches

b). Heterogeneous errors

cones
vertical dispersion unequal across graph

2.According to D.S. Vaughn (*Canadian Special Publications in Fisheries and Aquatic Sciences* 120:231-241) recruitment of juvenile Atlantic Menhaden *Brevoortia tyrannus* is related to stock size as follows:

$$\text{Recruits}(S) = 0.221\, S\, e^{k * S}$$

Stock size has units of metric tons (ton = 10^3 kg).
Recruits(S) has units of megacounts/yr = million fish per year.

k is a parameter with a numerical value of $k = -0.0000101$, estimated as the slope of the regression of $\log_e$Recruits(S) on the variable S.

a). Write an H_0/ H_A pair concerning the parameter *k*.

H_0 : $k = 0$

H_A : $k \neq 0$

b). Complete an ANOVA table for the regression, assuming n = 15, $SS_{total} = 100$, $r^2 = 80\%$, where r^2 is the 'explained variance' (ratio of $SS_{regression}$ to SS_{total}).

Source	df	SS	MS	F
regression	1	80	80	52
error	13	20	1.53846	
total	14	100		