Biology 4605/7220 Name____Key_____
Quiz #4b 13 October 2004

obsno	area(sq m)	Nsp
1	1	4.375
2	2	5.817
3	3	6.900
4	4	7.600
5	5	8.208
6	6	8.950
7	8	9.667
8	10	10.333
9	12	11.250
10	15	12.250
11	16	12.000
12	20	12.917
13	24	13.500
14	30	15.215
15	40	16.167
16	60	19.750
17	80	20.000
18	120	23.500
19	240	27.000

Gleason (1922 *Ecology* 3: 158-162) reported the following data on species number in relation to quadrat area in aspen woodlands in Michigan.

(1) Write an H_A/H_o pair to test whether there is a statistically significant relation between number of species *Nsp* and quadrat area *A*

H_o: $var(\beta_A \cdot A) = 0$

H_A: $var(\beta_A \cdot A) \neq 0$

or

H_o: $\beta_A = 0$

H_A: $\beta_A \neq 0$

The species area curve estimated from this data is:

$$Nsp = e^{1.59065} A^{0.327}$$

(2) Compute the number of species expected in a 80 m^2 quadrat __20.56_____

(3) The expected number of species in 240 m^2 quadrat is 29.45 species.
Write a data equation for the number of species in a 240 m^2 quadrat

__27__ = __29.45__ + ___-2.45___

(4) Complete an ANOVA table for the following regression model.

	ln(Nsp)	=	α	+	$z \cdot \ln A$	+	ϵ
df	9				1		8
SS	100				36		64

Source	df	SS	MS	F
model (A)	1	36	36	4.5
error	8	64	8	
total	9	100		