Biology 4605 / 7220   Name _____
Quiz #4a   8 October 2003

1. According to Kooyman et al (*Science* 217:726) avian energy utilization
(E = kilocalories/day) is 2.8 times the standard metabolic rate (SMR = kilocalories/day),
which in turn depends on body mass (M = kg).

$$E = 2.8 * SMR = 2.8 * \alpha * M^{0.723}$$

The parameter α has a numerical value of 78.3.   The exponent ($\beta = 0.723$) was estimated
as the slope of the regression of $\log_e$ E on the variable $\log_e$M.

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

b). Complete an ANOVA table for the regression, assuming n = 28, SS_{total} = 100,
r^2 = 40%, where r^2 is the 'explained variance' (ratio of $SS_{regression}$ to SS_{total}).

Source   df   SS   MS   F

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

a). Homogeneous errors	b). Straight line assumption violated