Stat 2470, Quiz #17, Fall 2014 Name KEY

Instructions: Show all work. Use exact answers or appropriate rounding conventions. If you use your calculator, you can show work by saying which calculator commands you used.

1. Construct a plot of ln(x) vs. ln(y) for the data below and construction a linear regression equation on the transformed variables.

x	5	10	15	20	25	30	45	60
y	16.3	9.7	8.1	4.2	3.4	2.9	1.9	1.3

$\ln(L_1) \to L_3$
$\ln(L_2) \to L_4$
LinReg L_3, L_4, Y_1

$\ln y = -1.049(\ln x) + 4.638$

2. Construct a quadratic regression equation for the data below.

x	1	1	2	4	4	4	6
y	23.0	24.5	28.0	30.9	32.0	33.6	20.0

QuadReg

$y = -1.715x^2 + 11.406x + 13.636$

3. For the regression model $y = 5.0 + 0.1x_1 - 0.5x_2 - .13x_3 - .01x_4 + \epsilon$ where y is maximal oxygen uptake, x_1 is weight, x_2 is years of age, x_3 is time necessary to walk a mile in minutes, and x_4 is heart rate at the end of the walk. Interpret the coefficients $\beta_1, \beta_2, \beta_3, \beta_4$.

Heartrate increases 0.1 units for each pound (or kg?) of weight gained; it decreases at 0.5 beats for each year older; decreases by .13 beats for each minute increase in time to walk a mile; and decreases by .01 beats for each increase in heartrate at the end of the walk.