Stat 2470, Quiz #16, 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. Use the data below to answer the following questions.

x	23	45	68	91	114	136	159	182	205	228
y	53.3	26.9	54.8	33.8	29.9	8.2	17.2	12.2	3.2	11.1

a. Find the linear regression line and determine the percent of variation explained by the linear relationship.

$\hat{y} = -.22x + 52.63$ $r^2 = .70$ 70%

b. Calculate and interpret a 95% prediction interval for x=100.

$\hat{y}(100) = 30.59$ $t_{\alpha/2, 9} = 2.26$ $S_{xx} = (69.01^2 * 9)$ 42861.4

$S = 10.535$ $\bar{x} = 125.1$

$30.59 \pm 2.26 \cdot 10.535 \sqrt{\frac{1}{10} + \frac{630}{12,861.9}}$

30.59 ± 8.06 (22.53, 38.65)

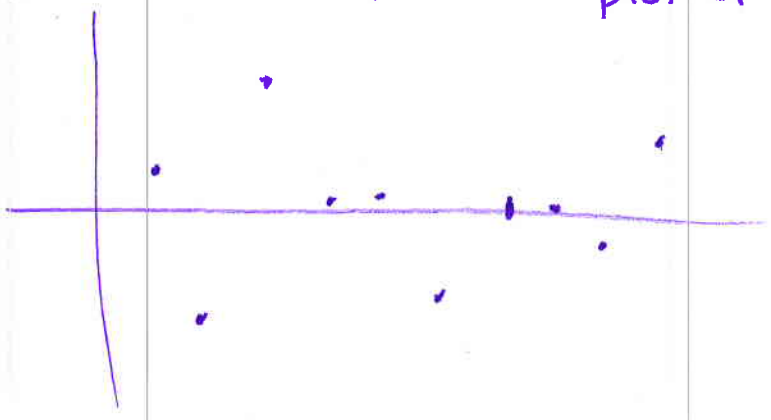
c. Find a confidence interval for the correlation coefficient.

95% (-.96, -.44)

99% (-.975, -.234)

d. Calculate the residuals for the regression line calculated above, and sketch the graph below.

$Y(L_1) \to L_3$ $L_2 - L_3 \to L_4$ plot L_4 vs. L_4



looks pretty random