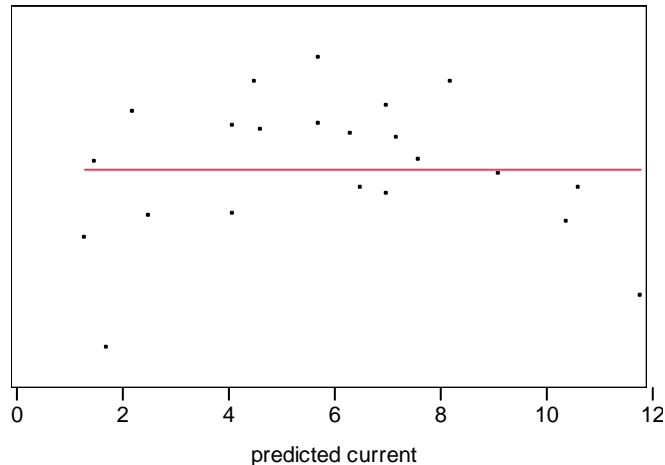


Name _____

STA 3032
Section 7347
Quiz #6
Spring, 2009

1. Wind speed (w_s) and electrical current (d_c) produced by a wind mill were measured on 22 days. A linear regression model was fitted to the data taking $y=d_c$ and $x=w_s$. Below is a plot of the residuals $y-\hat{y}$ plotted versus predicted current \hat{y} .



a. (10) Does the residual plot indicate heterogeneity of variance? Why or why not?

Maybe. It looks like the residuals for values of predicted current less than 2 may be more disperse residuals for values of predicted current between 2 and 8, and that residuals for values of predicted current between 2 and 8 may be more disperse residuals for values of predicted current greater than 8. This would imply heterogeneous (unequal) variances. But there are only 3 points with predicted current less than 2 and only 4 points with predicted current greater than 8, so we can't tell much about dispersion of residuals from these two sets of points.

b. (10) Does the residual plot indicate non-linearity between current and wind speed? Why or why not?

Yes, non-linearity is implied because residuals tend to be negative for small values of predicted current, increase to positive for middle values of predicted current, and then decrease to negative for large values of predicted current.

2. True-false (1 pt each).

- (T or F) In simple linear regression analysis normality is not needed for prediction intervals.
- (T or F) Residual plot are not useful for detecting outliers.
- (T or F) R^2 provides the same information as a residual plot.
- (T or F) Transformations can be used to remedy heterogeneity of variance.
- (T or F) The residual plot in problem 1 shows evidence of non-normality of the data.