Polynomial Regression and Transformations Using SAS Insight

In INSIGHT, click on Analyze and then Fit (Y X). Click on the response AG and then on Y. Next click on the predictor DIST and then on X. Clicking on output will produce the linear regression:

The residual plot looks nonlinear, so you can move the slide-bar and fit a quadratic function to the data:
Notice that the plot changed and the output near the slide-bar changed, but the fitted model did not. To get the regression equation for the quadratic model, you need to create $x^2$. On the worksheet with the data, click on the column heading, DIST. Go to the EDIT menu and click on Variables and then $Y^2$. This creates a variable called B_DIST which is $x^2$. Next go back to the dialog box for Fit (Y X). Click on the response AG and then on Y. Next click on the predictor DIST and then on X. Also, click on B_DIST and then on X. Clicking on output will produce the quadratic regression output:

![Quadratic Regression Output](image)

We next transform AG and fit the linear model relating $\log(AG)$ to DIST. On the worksheet with the data, click on the column heading, AG. Go to the EDIT menu and click on Variables and then $\log(Y)$. This creates a variable called L_AG which is $\log(AG)$. Carry out the linear regression as before using DIST as the predictor and L_AG as the response.
The output from the regression for the transformed model follows:
Notice that we have a normal probability plot for the residuals. This was obtained from the dialogue box for **FIT (Y X)** by clicking on **METHOD** and then clicking on **Residual Normal QQ**. Click on **OK** and then on **Apply** to get the fitted model.