

## Standardized Residual Plots on the TI-89

Standardized Residual Plots are used in order to put the residual plot on a meaningful scale. The pattern for a standardized residual plot will be identical to the pattern in the regular residual plot. The only difference is the scale on the y-axis. This scale allows us to easily detect potential outliers.

Let  $e = \text{residual} = y - \hat{y}$

$e$  commonly denotes residuals - it stands for "error"

$SS_{\text{Resid}} = \sum (y - \hat{y})^2$  (also referred to as SSE - sum of squares of error)

$s_e = \text{standard deviation of the residuals} = \sqrt{\frac{SSE}{n-2}}$

z-scores for residuals  $= \frac{e - \bar{e}}{s_e}$

but  $\bar{e}$  equals zero because  $\sum e = 0$

therefore,

z-scores  $= \frac{e}{s_e}$

<i>list1</i>	<i>list2</i>	<i>Resid</i>	<i>list3</i>	<i>list4</i>	<i>list5</i>
$x$	$y$	$y - \hat{y}$	$(y - \hat{y})^2$	$\sqrt{\frac{\text{sum}(\text{list3})}{n-2}}$	$\frac{\text{resid}}{\text{value in list4}} = \frac{y - \hat{y}}{s_e}$

### Plot *list5* (standardized residuals) versus *list2*

The sum command for *list4* can be found by selecting "F3 List" and scroll down to "Math". The "sum" command is the 5<sup>th</sup> on the list. Please note that you must be in the first cell of *list4*. An alternative would be to toggle to your homescreen (2<sup>nd</sup> apps) and calculate the  $s_e$  there. You can store it (Sto key) in X.