[Figure 11-4](https://www.inkling.com/read/r-cookbook-paul-teetor-1st/chapter-11/figure-11-4" \o "Figure 11-4. Diagnostic plots—pretty good fit) shows diagnostic plots for a pretty good regression:

* The points in the Residuals vs Fitted plot are randomly scattered with no particular pattern.
* The points in the Normal Q–Q plot are more-or-less on the line, indicating that the residuals follow a normal distribution.
* In both the Scale–Location plot and the Residuals vs Leverage plots, the points are in a group with none too far from the center.
* 

Figure 11-4 Diagnostic plots—pretty good fit

In contrast, [Figure 11-5](https://www.inkling.com/read/r-cookbook-paul-teetor-1st/chapter-11/figure-11-5) shows the diagnostics for a not-so-good regression. Observe that the Residuals vs Fitted plot has a definite parabolic shape. This tells us that the model is incomplete: a quadratic factor is missing that could explain more variation in *y*. Other patterns in residuals are suggestive of additional problems: a cone shape, for example, may indicate nonconstant variance in *y*. Interpreting those patterns is a bit of an art, so I suggest reviewing a good book on linear regression while evaluating the plot of residuals.

Figure 11-5 Diagnostic plots—not-so-good fit

There are other problems with the not-so-good diagnostics. The Normal Q–Q plot has more points off the line than it does for the good regression. Both the Scale–Location and Residuals vs Leverage plots show points scattered away from the center, which suggests that some points have excessive leverage.