

## Odds ratios with asterisks and 999 for c ON x

An odds is a ratio of two probabilities, in this case  $P(\text{class } j)/P(\text{last class})$ . An odds ratio (OR) is the ratio of two odds evaluated at different  $x$  values (typically 1 and 0). The probabilities can be computed in line with the description of multinomial logistic regression at the end of UG Chapter 14. Large negative coefficients give small probabilities and large positive coefficients give large probabilities. When you have a large negative intercept for class  $j$  and a large positive slope, the large negative intercept gives a small odds at  $x=0$  so that the denominator of the odds ratio gets small while the numerator (for  $x=1$ ) is larger. In this case, the odds ratio gets large. Asterisks indicate that the odds ratio is too large to print and 999 indicates that it is too large to evaluate.