(a) is always true.
(b) is not always true. Range of g not equals to real line.
(c) is not always true. Refer to page 48 in Lecture 7. The Wald's statistic and LRT statistic are only equivalent for Gaussian response case.
(d) is always true.
(e) is not always true. Consider counter-example is page 23 of Lecture 6.
(f) is not always true. Consider the matrix C by using contr.sum constraint in a one-way ANOVA setup.
(g) is always true. Easily verified by multiplication
(h) is always true. Easily verified by multiplication
(i) is always true. Refer to page 13 of Lecture 8, and substitute sigma = 1
(j) is always true.