Assignment 7

Due: Thursday, March 31

1. Show that the updating step of the Newton-Raphson algorithm is equivalent to the updating step of the iteratively reweighted least squares algorithm. In other words, show that if each algorithm starts with the same $\{\widehat{\boldsymbol{\beta}}^{(m)}$, the next iteration will produce the same $\{\widehat{\boldsymbol{\beta}}^{(m+1)}$.

2. Consider a generalized linear model with regression parameters $\boldsymbol{\beta}$. Give closed form expressions for the following; define any additional symbols or notation you need.

   (a) The p-value for the Wald test of $H_0 : \boldsymbol{\beta}_j = 0$.

   (b) The Wald confidence interval for $\boldsymbol{\beta}_j$.

   (c) The p-value for the Wald test of $H_0 : \lambda^T \boldsymbol{\beta} = 0$.

   (d) The Wald confidence interval for $\tau = \lambda^T \boldsymbol{\beta}$.