12.4 Exercises: Some Solutions (November 6, 2011)

12.1. Show that the generalized normal equation $\mathbf{X}'\mathbf{W}^{-}\mathbf{X}\boldsymbol{\beta} = \mathbf{X}'\mathbf{W}^{-}\mathbf{y}$ is consistent, i.e., it has a solution for $\boldsymbol{\beta}$ when $\mathbf{W}$ is defined as

$$\mathbf{W} = \mathbf{V} + \mathbf{X}\mathbf{U}\mathbf{X}', \quad \mathscr{C}(\mathbf{W}) = \mathscr{C}(\mathbf{X} : \mathbf{V}),$$

and $\mathbf{y} \in \mathscr{C}(\mathbf{X} : \mathbf{V})$.

• Solution to Ex. 12.1:

□