# ST 705 Linear models and variance components
# Homework problem set 10

April 2, 2024

1. Monahan exercise 4.9.
2. Monahan exercise 4.20.
3. Monahan exercise 4.21.
4. Monahan exercise 4.22.
5. Monahan exercise 4.23.
6. Monahan exercise 4.25.
7. Monahan exercise 4.27.
8. (a) Construct a counter example to show that $A^g$ may not be symmetric, even if $A$ is symmetric (e.g., even if $A = X'X$). That is, show that there exists $A^g$ such that $[A^g]' \neq [A']^g$ for some symmetric matrix $A$.

   (b) Prove that if $A$ is symmetric, then $\frac{1}{2}(A^g + [A^g]')$ is a symmetric generalized inverse of $A$.