PhD-Course on Iterative Methods for Linear Systems of Equations

Theoretical assignments day 3

1. Prove that $A + A^T$ SPD implies that $x^T A x > 0$ voor all nonzero and real vectors x.

2. Count the memory requirements for m GMRES iterations. Same question for GCR.

3. Count the number of operations that you need to carry out for m GMRES-iterations. Same question for GCR.

4. How can you find the norm of the GMRES-residual without calculating the residual vector? Same question for FOM.