

Homework 9

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Keywords: *Iterative methods, Arnoldi iteration, Lanczos Method*

1. Problems 33.2, 36.1, 38.5, 38.6
2. Following link provides a data structure to store sparse matrices:

http://www.cs.utexas.edu/users/inderjit/courses/cs383c/sparse_matrices.txt

Write a matlab code using the above specified data structure to compute the matrix-vector product $\mathbf{y} = A\mathbf{x}$ in $O(nz)$ operations, where nz is the number of non-zero entries in the sparse matrix A . Also write a matlab code to compute $\mathbf{y} = A^T\mathbf{x}$ in $O(nz)$ operations. Note that you should not explicitly create A^T to solve the latter problem.