

# 18.327/1.130: Wavelets, Filter Banks and Applications

## Problem Set 2

**Issued:** Monday, Feb. 23, 2004

**Due:** Wednesday, March 10, 2004

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### Matlab Exercise

Please submit your Matlab code and plots.

Develop a Matlab program to compute the spectral factors of a symmetric, positive definite filter (i.e., a filter whose Toeplitz matrix is symmetric and positive definite) using the Matlab root finding algorithm `roots`. Test your algorithm by using it to factor the degree 10 product filter to obtain the Daubechies 6-tap filter.

### Textbook Problems

1. Problem Set 3.4, pp. 102. Problems 3 and 6.
2. Problem Set 4.2, pp. 121–122. Problems 2, 4 and 5.
3. Problem Set 4.3, pp. 126–128. Problems 2, 12 and 17(b,c).
4. Problem Set 4.4, pp. 133–134. Problem 9.
5. Problem Set 5.2, pp. 152–153. Problems 2, 6 and 7.
6. Problem Set 5.5, pp. 172–173. Problem 1.