

Methods of Applied Mathematics I

HW7

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1 EXERCISE7.1

1. *Proof.* Since $|\lambda| = 1$, then

$$\|e_{\lambda}^{(N)}\|_2 = \frac{1}{\sqrt{N+1}} \sqrt{\sum_{i=0}^N \lambda^{2i}} = \frac{1}{\sqrt{N+1}} \sqrt{N+1} = 1 \quad (1.1)$$

□

2.
3.
4.

2 EXERCISE7.2

3 EXERCISE7.3

4 EXERCISE7.4