

Worksheet #15 (2017/12/4)

Name:

ID:

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Note: We will collect this worksheet at the end of the lecture.

- We plan to cover Sections 12.1–12.2.1 (exclusive) today.
 - We use Chapter 12 slides 1–20.
 - This is corresponding to the textbook pages 491–501.
- 1) What is the primitive 4-th root of unity? That is what is the first positive root for $w_4^4 = 1$?
 - 2) Spot check the inverse DFT of w_4 is indeed $\frac{1}{n}F_n^H$.
 - 3) Compute DFT of $[1, -1, 1, -1, 1, -1, 1, 1]$ using existing software, say Matlab. Make observations on the redundancy.
 - 4) Check y_1, y_2, y_3, y_4 , what pattern do you see? How can we leverage on it to speed up DFT?
 - 5) What is the pattern you see in F_4 ?