DC4: FFT - Part 1: Complex roots practice

Question 1 ✓SUBMITTED

Consider the n-th roots of unity for **n=16**.

What is ω_{16} in polar coordinates?

- (1, π/16)
- (1, 180)
- (1, π/8)
- (16, 2π)

Explain | Submitted

Question 2 ✓SUBMITTED

Consider ω_{16}. For what power **k** is $(\omega_{16})^k = -1$?

- k = 0
- k = 1
- k = 4
- k = 8 ✓
- k = 9
- k = 15

Explanation

Recall that: -1 = (1,π) and if z=(r,θ) then zk=(rk,kθ).

Now try for z = ω16.

Answer: k = 8

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Question 3 ✓SUBMITTED

Consider ω_{16}. For what power **k** is $(\omega_{16})^k = -\omega_{16}$?

- k = 0
- k = 1
- k = 4
- k = 8
- k = 9
- k = 15

Explain | Submitted

Question 4 ✓SUBMITTED

Consider ω_{16}. For what power **k** is $(\omega_{16})^{-1} = \omega_{16}^k$? In other words, for what **k** is $\omega_{16} \times (\omega_{16})^k = 1$?

- k = 0
- k = 1
- k = 4
- k = 8
- k = 9
- k = 15

Explain | Submitted

Question 5 ✓SUBMITTED

For what power **k** is $(\omega_{16})^k = (\omega_8)^2$?

- k = 0
- k = 1
- k = 4 ✓
- k = 8
- k = 9
- k = 15