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▶ Topic 2: Lossless Source Coding: Hamming Codes

▶ Topic 3: The Frequency Domain

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6.1 Complex Numbers

Week 3 Quiz due Nov 16, 2015 at 15:30 UTC

6.2 Complex Exponentials

Week 3 Quiz due Nov 16, 2015 at 15:30 UTC

6.3 Aliasing

6.3 QUIZ QUESTION 1 (1/1 point)

Consider a continuous time cosine wave with frequency 850kHz.

If this sine wave is sampled at 1 MHz (one million samples pre second), it is aliased so that it looks like a lower frequency continuous cosine wave with what frequency (in kHz)?

✓ Answer: 150

EXPLANATION

Due to aliaing, a cosine wave with frequency f sampled at a frequency F_s looks like a cosine with frequency $F_s - f$. Here $f = 850\text{kHz}$ and $F_s = 1\text{MHz} = 1000\text{kHz}$. Thus, $F_s - f = 1000\text{kHz} - 850\text{kHz} = 150\text{kHz}$.

You have used 3 of 3 submissions

6.3 QUIZ QUESTION 2 (1/1 point)

Which of the following discrete time sine waves is identical to the discrete time sine wave $\sin(1.3\pi n)$?

☐ $\sin(0.7\pi n)$

☐ $\sin(0.3\pi n)$

☒ $-\sin(0.7\pi n)$ ✓

☐ $-\sin(0.3\pi n)$

Week 3 Quiz due Nov
16, 2015 at 15:30 UTC

**6.4 Discrete
Fourier Transform**
Week 3 Quiz due Nov
16, 2015 at 15:30 UTC

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EXPLANATION

Since $\sin(1.3\pi n) = \sin(1.3\pi n - 2\pi n) = \sin(-0.7\pi n)$, and $\sin(x) = -\sin(-x)$, we have that $\sin(1.3\pi n) = -\sin(0.7\pi n)$.

You have used 2 of 2 submissions

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