Lecture 3

Lecture 3

- The n^{th} root of a complex number

Lecture 3

- The n^{th} root of a complex number
- The complex exponential $e^{j\theta} = \cos\theta + j\sin\theta$

Lecture 3

- The n^{th} root of a complex number
- The complex exponential $e^{j\theta} = \cos\theta + j\sin\theta$
- Sinusoids in continuous time

Example: Continuous-Time Sinusoid

Example: Continuous-Time Sinusoid

$x(t) = A\cos(\Omega t + \phi)$ is such that

Example: Continuous-Time Sinusoid

$x(t) = A\cos(\Omega t + \phi)$ is such that

- $x(t) \geq 1.50$ for 23.0% of its period

Example: Continuous-Time Sinusoid

$x(t) = A\cos(\Omega t + \phi)$ is such that

- $x(t) \geq 1.50$ for 23.0% of its period
- it takes 0.02 seconds for the value of the sinusoid to drop from 1.50 to 0.00

Example: Continuous-Time Sinusoid

$x(t) = A\cos(\Omega t + \phi)$ is such that

- $x(t) \geq 1.50$ for 23.0% of its period
- it takes 0.02 seconds for the value of the sinusoid to drop from 1.50 to 0.00
- $x(0) = -0.3$ and the first derivative $x'(0)$ is positive

Example: Continuous-Time Sinusoid

$x(t) = A\cos(\Omega t + \phi)$ is such that

- $x(t) \geq 1.50$ for 23.0% of its period
- it takes 0.02 seconds for the value of the sinusoid to drop from 1.50 to 0.00
- $x(0) = -0.3$ and the first derivative $x'(0)$ is positive

Based on given information, determine A, Ω and ϕ.