

September 14, 2004 – mini-Quiz #1 – 8.03

Your name

Circle your recitation – R01 – R02 – R03 – R04 – R05

1. $z = a + jb = Ae^{j\theta}$

a and b are real. Express A and θ in terms of a and b.

$$A = (a^2 + b^2)^{0.5}$$

$$\text{Euler: } e^{j\theta} = \cos\theta + j\sin\theta$$

$$\text{Thus: } \sin\theta = b/A, \cos\theta = a/A, \text{ and } \tan\theta = b/a$$

2. What was the highest frequency (in Hz) that you could hear last week during the hearing test in lectures?

This varied greatly from student to student. Most (not all) could hear up to about 15,000 Hz; a dozen could even hear 20,000 Hz. As you age, your ability to hear high frequencies decays gradually. Professor Lewin could not hear any higher than 6000 Hz.