Q1 - Answer = c

Q2 - Problem A - Last name A-K

You ask your roommate to turn his boom box down 3 dB and he complies. By what factor is the sound intensity reduced?

A. 2

B. 3

C. 4.6

D. 100

E. 1.3

$3\ \text{dB} = 10 \log(I_{old}/I_{new})$

$\log(I_{old}/I_{new}) = 3/10 = 0.3$

$I_{old}/I_{new} = 10^{0.3} = 2$

Q1 - Answer = c
Q2 - Problem B - Last Name L-Z

- The dynamic range (loudest sound to softest) of a CD recording is said to be 90 dB. What is intensity of the softest sound that can be reproduced if the loudest is 0.3 W/m^2?

A. 3.3×10^{-3} W/m^2

B. 3×10^{-8} W/m^2

C. 3.7×10^{-5} W/m^2

D. 5.3×10^{-11} W/m^2

E. **3×10^{-10} W/m^2**

$90\ dB = 10 \log(I_{loud}/I_{soft})$

$\log(I_{loud}/I_{soft}) = 90/10=9$

$I_{loud}/I_{soft} = 10^9$

$I_{soft}=I_{loud}/10^9=0.3/10^9$

$I_{soft} = 3 \times 10^{-10}$ W/m^2