## Answer on Question \#48085-Physics-Acoustics

Area of a window is $A=2 m^{2} \&$ the intensity level at the open window is $\beta=80 d B$. then, how much acoustic power enters the room ?

## Solution

The intensity level is:

$$
\beta=10 \log _{10} \frac{I}{I_{0}},
$$

where $I_{0}=10^{-12} \frac{\mathrm{~W}}{\mathrm{~m}^{2}}$,
The sound intensity is

$$
80=10 \log _{10} \frac{I}{10^{-12} \frac{\mathrm{~W}}{\mathrm{~m}^{2}}} \rightarrow I=10^{-4} \frac{\mathrm{~W}}{\mathrm{~m}^{2}}
$$

The acoustic power is

$$
P=I A=10^{-4} \frac{W}{m^{2}} \cdot 2 m^{2}=2 \cdot 10^{-4} W
$$

