

22. (a) The intensity is given by  $I = P/4\pi r^2$  when the source is “point-like.” Therefore, at  $r = 3.00$  m,

$$I = \frac{1.00 \times 10^{-6} \text{ W}}{4\pi(3.00 \text{ m})^2} = 8.84 \times 10^{-9} \text{ W/m}^2 .$$

- (b) The sound level there is

$$\beta = 10 \log \left( \frac{8.84 \times 10^{-9} \text{ W/m}^2}{1.00 \times 10^{-12} \text{ W/m}^2} \right) = 39.5 \text{ dB} .$$