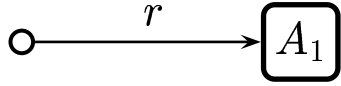


A point sound source generates sound waves isotropically. It generates waves with a power of $P = 3 \text{ W}$. A detector is placed at a distance $r = 0.5 \text{ m}$ away. The cross section of the detector is $A_1 = 0.1 \text{ m}^2$.



Determine the intensity detected.

A) $I = \frac{P}{A_1}$.

B) $I = \frac{P}{\pi r^2}$.

C) $I = \frac{P}{4\pi r^2}$.

A point source generates sound waves isotropically.

So

$$I = \frac{P}{4\pi r^2} = \frac{3}{(4\pi)(0.5^2)} \sim 1 \frac{\text{W}}{\text{m}^2}.$$

Answer **C**

17.04-01 point Source 2004-3-24