

9. (a) Using $\lambda = v/f$, where v is the speed of sound in air and f is the frequency, we find

$$\lambda = \frac{343 \text{ m/s}}{4.5 \times 10^6 \text{ Hz}} = 7.62 \times 10^{-5} \text{ m} .$$

- (b) Now, $\lambda = v/f$, where v is the speed of sound in tissue. The frequency is the same for air and tissue.
Thus $\lambda = (1500 \text{ m/s})/(4.5 \times 10^6 \text{ Hz}) = 3.33 \times 10^{-4} \text{ m}$.