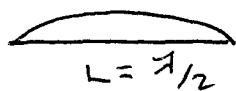


3. (A) standing wave \leftrightarrow opposite directions
scenario III

$$k = \frac{2\pi}{\lambda} = 25 \quad \lambda = ~~0.25~~ .251 \text{ m}$$



$$L = \underline{\underline{.126 \text{ m}}}$$

(B) beats \leftarrow different frequencies
scenario I

$$\omega_1 = 500 \quad \omega_2 = 490$$

$$\omega = 2\pi f \quad f_1 = 79.58 \quad f_2 = 77.99$$

$$f_{\text{beat}} = f_1 - f_2 = \underline{\underline{1.59 \text{ Hz}}}$$

(C) simple traveling wave \leftarrow same direction, same
freq, diff phase

$$\text{new amplitude} = 2A \cos\left(d_1 \cdot \frac{d_2}{2}\right)$$

$$= 2(.04) \cos\left(\frac{1.24 - .48}{2}\right) = \underline{\underline{.0743 \text{ m}}}$$