2. \( \lambda \) read from graph \( \approx 45 \text{ m} \)

amplitude read from graph \( \approx .035 \text{ m} \) \( \Box \)

positive direction \( \Rightarrow \) use negative sign

\[ k = \frac{2\pi}{\lambda} = \frac{2\pi}{45} = 13.96 \text{ m}^{-1} \] \( \bigcirc \)

\[ v = \omega \]
\[ \omega = vk = (2.45)(13.96) = 34.2 \text{ Hz} \] \( \bigcirc \)

\[ y(x,t) = A \cos(kx - \omega t + \phi) \approx .03 \text{ at } t=0 \]

\[ \phi = \cos^{-1}\left(\frac{.03}{.035}\right) = .541 \text{ rad} \]

\[ \frac{dy}{dx}\bigg|_{t=0} = -kA \sin(\phi) \text{ is negative, so} \]

\[ x=0 \] \( \sin(\phi) \) is positive so quad I is good

\[ y(x,t) = .035 \cos(13.96x - 34.2t + .541) \]