

HW#3

Solve Prof. 4-10 in p. 112 of the textbook.

- 4-10 a.** Show that if the maximum positive displacement of a sinusoidal wave occurs at distance x_0 cm from the origin when $t = 0$, its initial phase angle φ_0 is given by

$$\varphi_0 = \frac{\pi}{2} - \left(\frac{2\pi}{\lambda}\right)x_0$$

where the wavelength λ is in centimeters.

- b.** Determine the initial phase and sketch the wave when $\lambda = 10$ cm and $x_0 = 0, \frac{5}{6}, \frac{5}{2}, 5,$ and $-\frac{1}{2}$ cm.
- c.** What are the appropriate initial phase angles for (b) when a cosine function is used instead?