Answer on Question #65637- Physics Mechanics Relativity

The oscillations of two points x1 and x2 at x = 0 and x = 1 m respectively are modelled as follows: y1 = 0.3 sin 4πt and y2 = 0.3 sin (4πt +π / 8) Calculate the wavelength and speed of the associated wave.

Data:

$y_1 = 0.3\sin(4\pi t)\,; x = 0m$

$y_1 = 0.3\sin\left(4\pi t + \frac{\pi}{8}\right);\ \ x = 1m$

Solution:

$\Delta\varphi = \left(4\pi t + \frac{\pi}{8}\right) - 4\pi t = \frac{\pi}{8};$

$\frac{\pi}{8} - 1\ m$

$2\pi - \ \lambda\ m$

$\lambda = 16m;$

$w = 2\pi\nu = 4\pi; \qquad \nu = 2Hz - frequency$

$v = \lambda * \nu = 32\frac{m}{s}$

Answer: $\boldsymbol{\lambda = 16m; v = 32\frac{m}{s}}$