

Gate 2023 _nm_ 33

Karyampudi Meghana Sai
EE23BTECH11031

For a regular sinusoidal wave propagating in deep water having wave height of 3.5 m and wave period of 9 s, the wave steepness is _____ (round off to three decimal places). Gate 2023 NM 33

Solution:

Symbol	Value	Description
H	$3.5m$	wave height
T	$9s$	wave period
S	?	wave steepness
L		wave length

TABLE I
INPUT PARAMETERS

$$S = \frac{H}{L} \quad (1)$$

$$L = \frac{g \cdot T^2}{2\pi} \quad (2)$$

$$= \frac{9.81 (9)^2}{2\pi} \quad (3)$$

$$= 126.53m \quad (4)$$

Substituting the value of L in equation(2).

$$S = \frac{3.5}{126.53} \quad (5)$$

$$= 0.028 \quad (6)$$

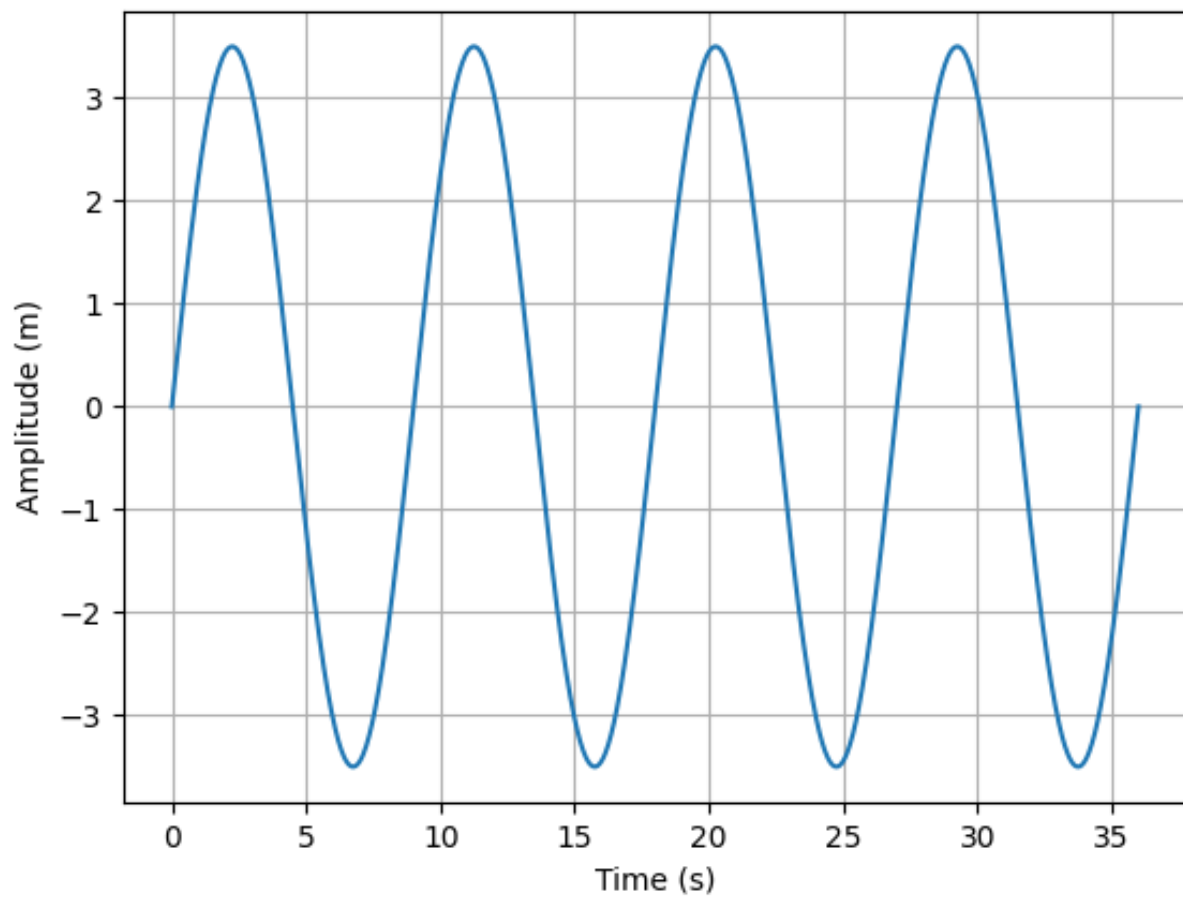


Fig. 1. Sinusoidal wave