Gate 2023_nm_33

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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

$$S = \frac{H}{L} \tag{1}$$

$$L = \frac{g \cdot T^2}{2\pi} \tag{2}$$

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

$$= 126.53m \tag{4}$$

Substituting the value of L in equation(2).

$$S = \frac{3.5}{126.53} \tag{5}$$

$$= 0.028 \tag{6}$$

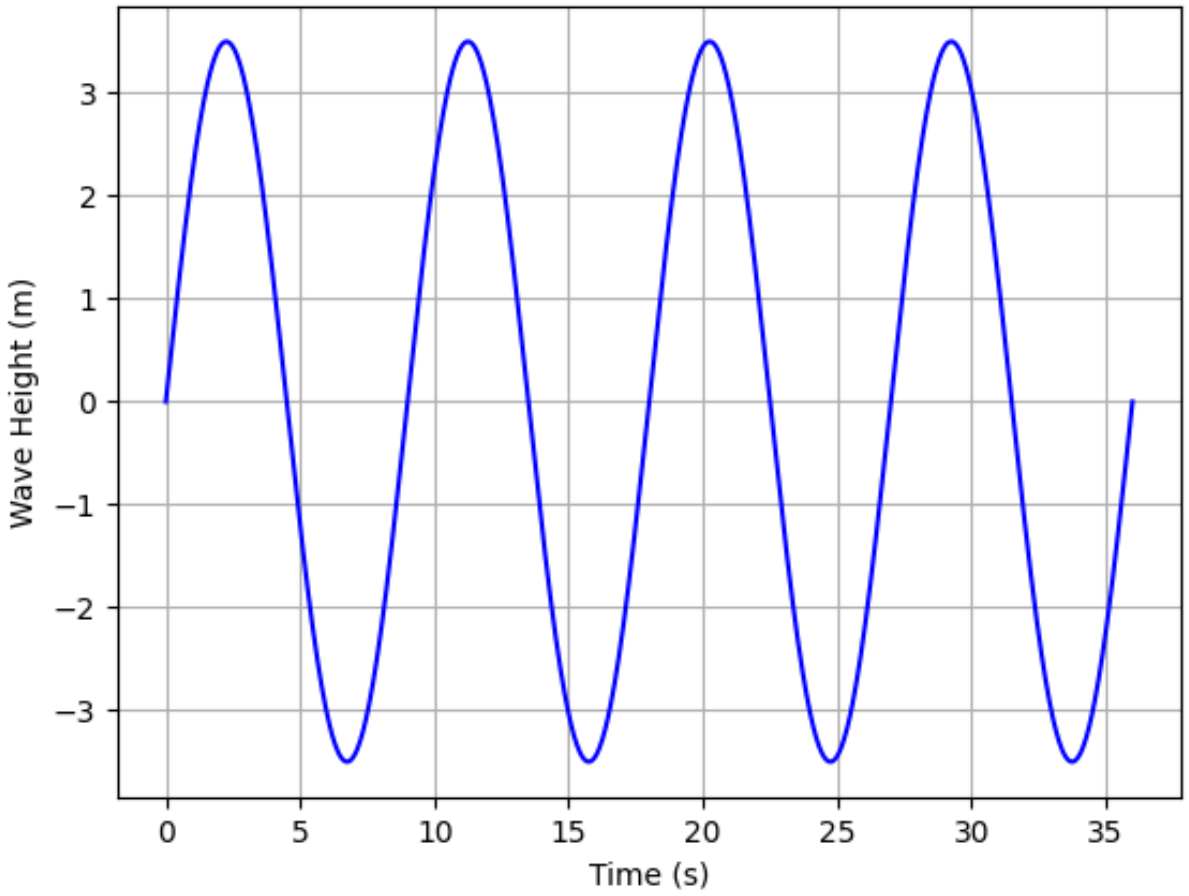

Fig. 1. Sinusoidal wave