

Question 23049

$$A = 0.17 \text{ m}, T = 0.84 \text{ s} .$$

The frequency, by definition $\nu = \frac{1}{T} = \frac{1}{0.84 \text{ s}} \approx 1.2 \text{ s}^{-1}$.

The angular frequency is by definition, $\omega = \frac{2\pi}{T} = 7.48 \text{ s}^{-1}$.

General expression for displacement

$$x = A \sin(\omega t + \delta) , \quad v = \dot{x} = A \omega \cos(\omega t + \delta) , \quad a = \dot{v} = -A \omega^2 \sin(\omega t + \delta) .$$

Maximum values for displacement, velocity and acceleration are 0.17; 1.27; 9.51 respectively.