

given: $L = 2$
 $\varphi = \frac{\pi}{3}$

$$\dot{\theta} = \omega(0) = 3$$

find: A_{\max}
 ω
 v_{\max}
 a_{\max}

everything describing the motion @ $t = 2.5$ s

$$\theta = A\omega \sin(\omega t + \varphi)$$

$$A = \frac{-\dot{\theta}(0)}{\omega \sin(\varphi)} = |-1.35| = 1.35 \text{ m}$$

$$\omega = \sqrt{\frac{g}{L}} = 2.21 \frac{\text{rad}}{\text{s}}$$

$$v_{\max} = A\omega = .7735$$

$$a_{\max} = A\omega^2 = 1.709$$

$$\theta(2.5) = A \cos(\omega t + \varphi) = \frac{1.35}{\text{s}^2} \cdot 1.29 \frac{\text{rad}}{\text{s}^2}$$

$$\dot{\theta}(2.5) = -A\omega \sin(\omega t + \varphi) = \frac{1.35}{\text{s}} \cdot .850 \frac{\text{rad}}{\text{s}}$$

$$a_{\theta}(2.5) = -A\omega^2 \cos(\omega t + \varphi) = \frac{1.35}{\text{s}^2} \cdot -6.32 \text{ rad}$$