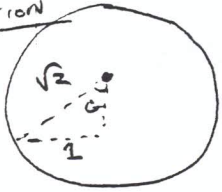


POSITION



Trig \Rightarrow other side is 1 also.

$N_{II} \Rightarrow \uparrow$, that

N_{II} (radial) \Rightarrow



$$\vec{R} = R \left(\frac{1}{\sqrt{2}} \right) \hat{i} + R \left(\frac{1}{\sqrt{2}} \right) \hat{j}$$

$$R \vec{v} = \frac{R}{\sqrt{2}} \hat{i} + \frac{R}{\sqrt{2}} \hat{j}$$

$$\frac{R}{\sqrt{2}} - mg = 0 \Rightarrow R = \sqrt{2} mg$$

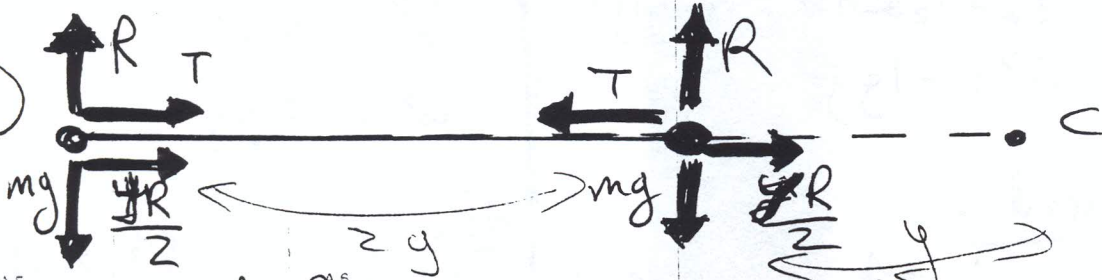
$$\frac{R}{\sqrt{2}} = m \omega^2 r$$

$$\Rightarrow mg = m \omega^2 (1)$$

$$\Rightarrow \omega = \sqrt{g} \text{ rad/sec.}$$

②

(i)



(i) Left particle...

$$N_{II} (\hat{j} \text{ dir}) \Rightarrow R = mg$$

$$N_{II} (\hat{i} \text{ dir}) \Rightarrow T + \frac{yR}{2} = m \omega^2 (2y)$$

$$\Rightarrow T + \frac{y mg}{2} = 3m \omega^2 y \quad (1)$$

Right Particle:

$$N_{II} (\hat{j} \text{ dir})$$

$$\frac{yR}{2} - T = m \omega^2 y$$

$$\Rightarrow \frac{y mg}{2} - T = m \omega^2 y \quad (2)$$

Add Eqn (1) and (2):

$$\Rightarrow \frac{y mg}{2} + \frac{y mg}{2} = 3m \omega^2 y + m \omega^2 y$$

$$\Rightarrow y mg = 4m \omega^2 y$$

$$\Rightarrow \frac{g}{4} = \omega^2$$

$$\Rightarrow \omega = \frac{\sqrt{g}}{2} \text{ Rad/Sec.}$$