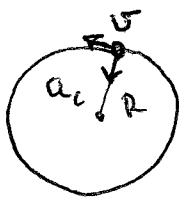


1. a) $360^\circ = 2\pi \text{ rad}$ b) $180^\circ = \pi \text{ rad}$ c) $90^\circ = \frac{\pi}{2} \text{ rad}$
 d) $45^\circ \cdot \frac{2\pi \text{ rad}}{360^\circ} = \frac{90\pi}{360} \text{ rad} = \frac{\pi}{4} \text{ rad}$
 e) $30^\circ \cdot \frac{2\pi \text{ rad}}{360^\circ} = \frac{60\pi}{360} \text{ rad} = \frac{\pi}{6} \text{ rad}$

2. a) $\frac{\pi}{3} \text{ rad} \cdot \frac{360^\circ}{2\pi \text{ rad}} = \frac{360^\circ}{6} = 60^\circ$
 b) $\frac{2\pi}{3} \text{ rad} \cdot \frac{360^\circ}{2\pi \text{ rad}} = \frac{360^\circ}{3} = 120^\circ$
 c) $\frac{3\pi}{4} \text{ rad} \cdot \frac{360^\circ}{2\pi \text{ rad}} = \frac{1080^\circ}{8} = 135^\circ$
 d) $\frac{3\pi}{2} \text{ rad} \cdot \frac{360^\circ}{2\pi \text{ rad}} = \frac{1080^\circ}{4} = 270^\circ$
 e) $\frac{\pi}{5} \text{ rad} \cdot \frac{360^\circ}{2\pi \text{ rad}} = \frac{360^\circ}{10} = 36^\circ$

3.



$R = 8 \text{ m}$

$v = 50 \text{ km/h} \cdot \frac{1 \text{ h}}{3600 \text{ s}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} = 13,9 \text{ m/s}$

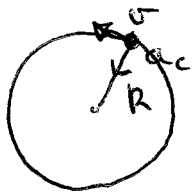
$a_c = \frac{v^2}{R} = \frac{13,9^2}{8} = \underline{\underline{24,1 \text{ m/s}^2}}$

4.

$a_c = \frac{v^2}{R} \Rightarrow v^2 = R a_c \Rightarrow v = \sqrt{R \cdot a_c}$

$v = \sqrt{10 \cdot 30,63} = 17,5 \text{ m/s} \cdot \frac{3600 \text{ s}}{1 \text{ h}} \cdot \frac{1 \text{ km}}{1000 \text{ m}} = \underline{\underline{63 \text{ km/h}}}$

5.

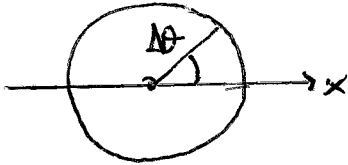


$$v = 52 \text{ km/h} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ h}}{3600 \text{ s}} = 14,44 \text{ m/s}$$

$$a_c = 13,9 \text{ m/s}^2$$

$$a_c = \frac{v^2}{R} \Rightarrow R = \frac{v^2}{a_c} = \frac{14,44^2}{13,9} = \underline{15 \text{ m}}$$

6.

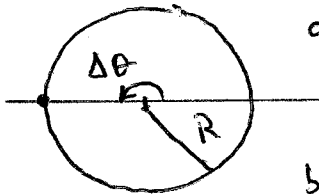


$$\Delta\theta = \theta - \theta_0 = 4 \text{ rad}$$

$$t = 0,15 \text{ min} = 9 \text{ s}$$

$$\theta = \theta_0 + \omega t \Rightarrow \omega = \frac{\theta - \theta_0}{t} = \frac{4 \text{ rad}}{9 \text{ s}} = \underline{0,4 \text{ rad/s}}$$

7.



$$a) \Delta\theta = 9,5 \text{ vueltas} \cdot \frac{2\pi \text{ rad}}{1 \text{ vuelta}} = \underline{\pi \text{ rad}}$$

$$b) \omega = \frac{\Delta\theta}{t} = \frac{\pi \text{ rad}}{1,5 \text{ s}} = \underline{2,1 \text{ rad/s}}$$

$$t = 1,5 \text{ s}$$

$$R = 15 \text{ cm} = 0,15 \text{ m}$$

$$c) v = \omega R = 2,1 \cdot 0,15 = \underline{0,32 \text{ m/s}}$$

8.

$$\omega = 18,8 \text{ rad/s}$$

$$a) \theta = \theta_0 + \omega t \Rightarrow \theta = 0 + 18,8 \cdot 1 = 18,8 \text{ rad}$$

$$\theta = 18,8 \text{ rad} \cdot \frac{1 \text{ vuelta}}{2\pi \text{ rad}} = \underline{3 \text{ vueltas}}$$

$$b) 0,5 \text{ min} = 30 \text{ s} \Rightarrow 3 \cdot 30 = 90 \text{ vueltas.}$$

$$c) \theta = \theta_0 + \omega t \Rightarrow \theta = 0 + 18,8 \cdot 30 = \underline{564 \text{ rad}}$$