

A wheel rotates with a constant angular acceleration of 3.50 rad/s^2 . If the angular speed of the wheel is 2.00 rad/s at $t=0$,

(a) through what angle does the wheel rotate in 2.00 s ?

(b) what is the angular speed at $t = 2.00 \text{ s}$?

A wheel will rotate at angle:

$$\varphi = \omega_0 t + \frac{\beta t^2}{2}$$

Where β - angular acceleration

$$\varphi = 2 \text{ rad/s} * 2 \text{ s} + \frac{3.5 \text{ rad/s}^2 * (2 \text{ s})^2}{2} = 11 \text{ rad}$$

Angular speed:

$$\omega = \omega_0 + \beta t$$
$$\omega = 2 \text{ rad/s} + 3.5 \text{ rad/s}^2 * 2 \text{ s} = 9 \text{ rad/s}$$

Answer: $\varphi = 11 \text{ rad}$, $\omega = 9 \text{ rad/s}$