

Angular Acceleration

- Angular acceleration is the change in angular velocity ω divided by the change in time.

$$\bar{\alpha} \equiv \frac{\omega_f - \omega_0}{\Delta t}$$

- If the speed of a roller coaster car is 15 m/s at the top of a 20 m loop, and 25 m/s at the bottom. What is the cars average angular acceleration if it takes 1.6 seconds to go from the top to the bottom?

$$\omega = \frac{V}{R}$$

$$\omega_f = \frac{25}{10} = 2.5$$

$$\omega_0 = \frac{15}{10} = 1.5$$

$$\bar{\alpha} \equiv \frac{2.5 - 1.5}{1.6} = 0.64 \text{ rad/s}^2$$