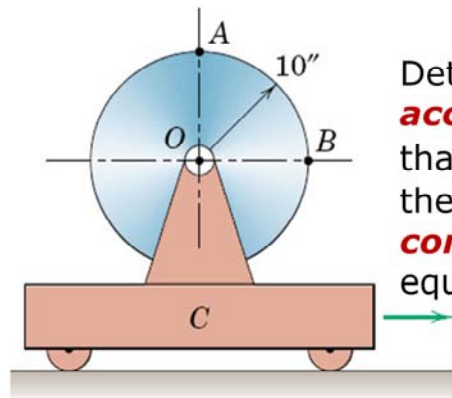


Question of the Day

The **acceleration** of the cart is 4 ft/s^2 to the right.



Determine the **angular acceleration** of the wheel so that **point A** on the top of the rim has a **horizontal component of acceleration** equal to **zero**.

ME 231: Dynamics

$$\begin{aligned}\mathbf{a}_A &= \mathbf{a}_O + \mathbf{a}_{A/O} = \mathbf{a}_O + (\mathbf{a}_{A/O})_t + (\mathbf{a}_{A/O})_n \\ &= \mathbf{a}_O + (\boldsymbol{\alpha} \times \mathbf{r}) + (\boldsymbol{\omega} \times (\boldsymbol{\omega} \times \mathbf{r}))\end{aligned}$$

$$0 = a_o + r\alpha$$

$$\alpha = -\frac{a_o}{r} = -\frac{4 \text{ ft/s}^2}{10/12 \text{ ft}} = -4.8 \text{ rad/s}^2$$