

12.11. Since $\tau = I\alpha$, $\alpha = \frac{\tau}{I}$. Also, $\tau = Fr$ and $I = mr^2 \Rightarrow \alpha = \frac{F}{mr}$. Calculate α for each case:

$$\alpha_a = \frac{F_0}{m_0 r_0}$$

$$\alpha_b = \frac{2F_0}{2m_0 r_0} = \alpha_a$$

$$\alpha_c = \frac{F_0}{m_0(2r_0)} = \frac{1}{2}\alpha_a$$

$$\alpha_d = \frac{2F_0}{(2m_0)(2r_0)} = \frac{1}{2}\alpha_a$$

So $\alpha_a = \alpha_b > \alpha_c = \alpha_d$.