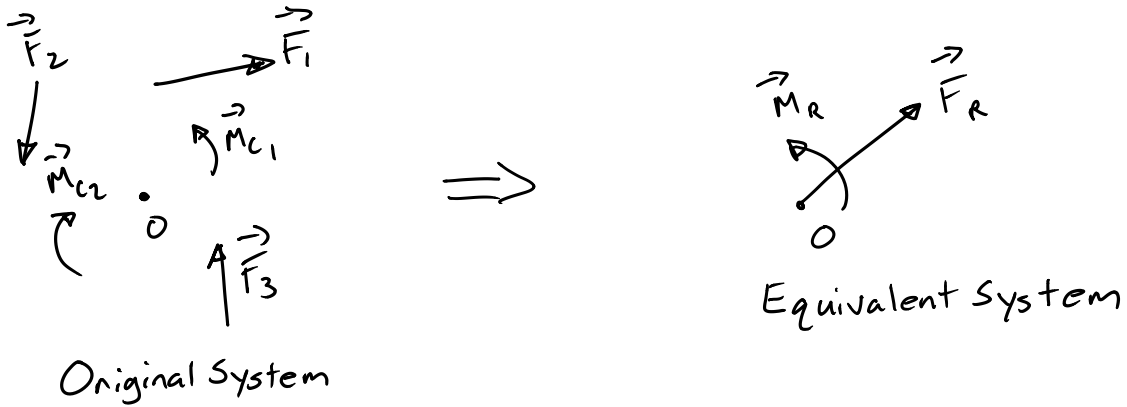


4.2) Equivalent Systems

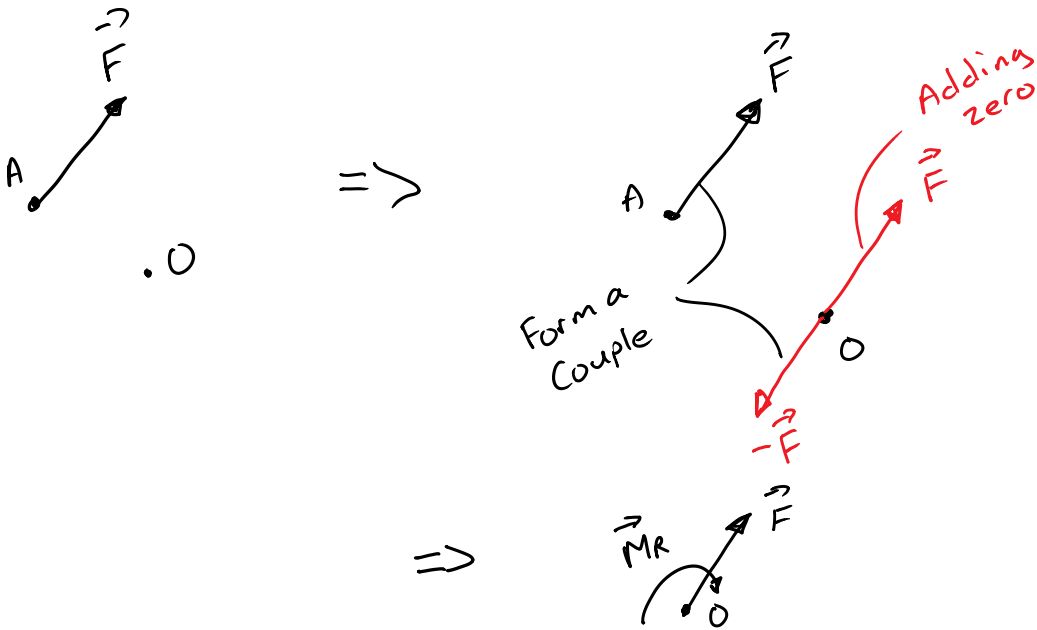
Goal: Replace a system of forces and couple moments with an equivalent system such that:

- Tendency of translation is preserved
- Tendency of rotation is preserved

Force and Couple Moment Equivalent System



Moving a Force to a different location



In General

$$\vec{F}_R = \sum \vec{F}$$

$$\vec{M}_R = \sum \vec{M}_C + \sum (\vec{r} \times \vec{F})$$

Existing Couple Moments

Moments of Force about the equivalent point

Section 4: Moments of Force, Equivalent Systems, and Distributed Loading

Single Equivalent Force System

- Offset \mathbf{F}_R such that the moment of force produced is the same as \mathbf{M}_R

