
NOTES: Equilibrium of rigid bodies

For particles (or "particles") all the lines of action of forces _____
_____.

For general rigid bodies this is *not* true! Therefore,
_____ can result. Therefore, we also need

$$\Sigma \quad = 0$$

for equilibrium.

Solution plan

1) _____ (Draw a
_____!)

2) Apply equilibrium:

- $\Sigma \quad = 0$

i. In 2-D usually easier to do in _____
form:

ii. Be sure to show your _____
_____!

- $\Sigma \quad = 0$

What point?

1. _____ one you want!

2. Look for

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3) Solve equations!

Dos and Don'ts

- *Do* draw the FBD.
- *Don't* assume you know the value of any reaction (force or moment) when you draw them on your FBD. Leave them as unknowns, even if it seems obvious to you what the values are. (You'll be surprised how often your intuition is wrong!)
- *Do* look at your FBD as you write the equilibrium equations. That's why you drew it!
- *Don't* write equilibrium equations first and then decide how your FBD matches your solution.
- *Do* identify your coordinate system.
- *Don't* assume it's obvious. (It's often much more convenient to use tilted axes!)
- *Do* use symbols in your solution as far as possible before plugging in numbers.
- *Don't* assume all your units work out, and so *do* write your units in each calculation.
- *Do* follow the advice above.
- *Don't* not follow the advice above.