

Your TA, Section # and Section time:

Your name:

# Cornell TAM 2020

No calculators, books or notes allowed.

3 Problems, 90 minutes (+ up to 90 minutes overtime)

# Prelim 1

Sept 28, 2010

**Directions.** To ease your TA's grading and to maximize your score, please:

- ↙ • Draw **Free body diagrams** whenever force, moment, linear momentum, or angular momentum balance are used.
- Use correct **vector notation**.
- A+ Be (I) neat, (II) clear and (III) well organized.
- TIDILY REDUCE and box in your answers (Don't leave simplifiable algebraic expressions).
- >> Make appropriate Matlab code clear and correct.  
You can use shortcut notation like " $T_7 = 18$ " instead of, say, " $T(7) = 18$ ".  
Small syntax errors will have small penalties.
- ↗ Clearly **define** any needed dimensions ( $\ell, h, d, \dots$ ), coordinates ( $x, y, r, \theta \dots$ ), variables ( $v, m, t, \dots$ ), base vectors ( $\hat{i}, \hat{j}, \hat{e}_r, \hat{e}_\theta, \hat{\lambda}, \hat{n} \dots$ ) and signs ( $\pm$ ) with sketches, equations or words.
- **Justify** your results so a grader can distinguish an informed answer from a guess.
- ➔ If a problem seems *poorly defined*, clearly state any reasonable assumptions (that do not oversimplify the problem).
- ≈ Work for **partial credit** (from 60–100%, depending on the problem)
  - Put your answer is in terms of well defined variables even if you have not substituted in the numerical values.
  - Reduce the problem to a clearly defined set of equations to solve.
  - Provide Matlab code which would generate the desired answer (and explain the nature of the output).
- **Extra sheets.** Put your name on each extra sheet, fold it in, and refer to it at the relevant problem.  
Note the last page is **blank** for your use. Ask for more extra paper if you need it.

Problem 1: \_\_\_\_\_/25

Problem 2: \_\_\_\_\_/25

Problem 3: \_\_\_\_\_/25