

Recitation Notes
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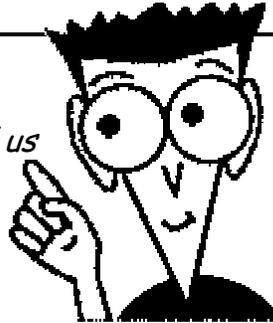
Topics covered

- Dimensional Analysis
- Problem Set #1 & #3

Dimensional Analysis for Dummies

- *A reference for the rest of us*

"Welcome to the world of dimensional analysis!" - Adam C. Powell



Here's a different way to look at dimensional analysis...

Suppose you are the coach of the NBA All-Star (Eastern) Team and it's your job to decide whose playing in the All-Star game.

You have decided that in order to have a more consistent game, there will be four permanent players on the court and one "disposable".

Question 1: Who should be in the four permanent positions?

Looking at the player roster, you find that there are four players from the Celtics (probably never happened or will ever happen). Is it a good choice to give them the four permanent positions or should you select players from different teams? *(no answer this time, because someone cheated last time)*

Question 2: How often should you change players?

As part of the deal with the TV network, you agreed that everyone in the team would play once (since this is the All-Star game). Suppose there are 10 players in the team, how many changes do you have to make such that everyone will have a chance to play?

Question 3: What's the moral of the story (if any)?

1. Select variables that do not "self-destruct" to make up the core group, because you always want the newcomer to participate in the dimensionless number and not being left out.

2. Every variable should have a chance to participate in a dimensionless number once. This is one way to look at how many dimensionless groups are formed.

Problem Set 1

- Vector field
- Substantial derivative
- Real solution to the differential equation
- Chain rule in the error function derivative