Physics 121 – August 28, 2017

Assignments:

This week:

- Finish reading Chapter 2 of textbook (you can skip polar coordinates for now)
- Complete ETA Problem Set #2 by Sept 4 at 4 PM
- Chapter 2 written problems 38, 47, 50, 62, and 68
- Start reading Chapter 3 (linear motion concepts)

Expert TA:

https://www.theexpertta.com/Login.aspx

Things to note:

1. Sometimes "numerical" answer, sometimes "expressions" answer, sometimes a combination of both
2. Work things out on paper.
3. Take advantage of feedback and hints.

Finishing up from last time:
Scale analysis is an important skill

Base Quantity	Symbol for Dimension
Length	L
Mass	M
Time	T
Current	I
Thermodynamic temperature	Θ
Amount of substance	N
Luminous intensity	J

Table 1.3 Base Quantities and Their Dimensions

Physicists often use square brackets around the symbol for a physical quantity to represent the dimensions of that quantity. For example, if r is the radius of a cylinder and h is its height, then we write $[r] = \mathrm{L}$ and $[h] = \mathrm{L}$ to indicate the dimensions of the radius and height are both those of length, or L. Similarly, if we use the symbol A for the surface area of

Vectors

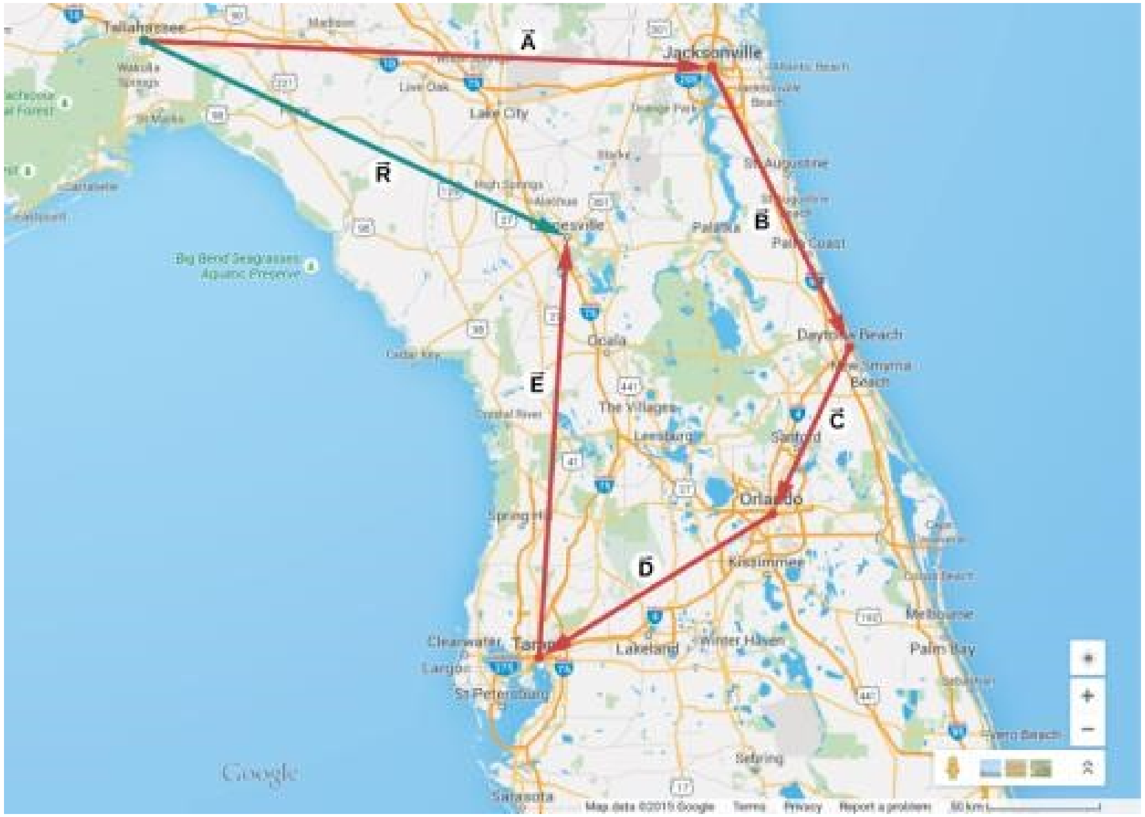
1. **Scalars** are quantities that can be represented by a single number: mass, distance between two points, elapsed time, etc.

Note that scalars can be defined at some point (temperature at the origin of some coordinate system), or we might be talking about a **scalar field,** such as T(x,y,z) equals the temperature defined at all points (x,y,z) in this room.

2. **Vectors** are quantities that must carry two pieces of information: magnitude and direction. Examples are velocity, acceleration, and force.

Note that vectors can also be defined at some point (or not), and they can also be used to define a **vector field**, such as the wind velocity (speed and direction) defined at all points in this room.

FIGURE 2.11



When we use the parallelogram rule four times, we obtain the resultant vector $\vec{\mathbf{R}} = \vec{\mathbf{A}} + \vec{\mathbf{B}} + \vec{\mathbf{C}} + \vec{\mathbf{D}} + \vec{\mathbf{E}}$, which is the green vector connecting Tallahassee with Gainesville.

Clicker question

Given three vectors, **A** = (1.5) **i** + (0.7) **j** ,
B = (-3.2) **i** + (1.7) **j** , **C** = (1.2) **i** + (-3.3) **j**

The sum of these three vectors is another vector,
D = **A** + **B** + **C**. In which quadrant does **D** lie?

A. I
B. II
C. III
D. IV