

Review of PHY2053

Along the way we talked about cause and effects.

Cause	Effect	Name	Equation
Force	Acceleration	Newton's 2 nd	$\sum \vec{F} = m\vec{a}$
Work	Change in mechanical energy	Work-Energy Theorem	$W_{nc} = \Delta K + \Delta U$
Torque	Angular acceleration	Newton's 2 nd for rotational motion	$\sum \tau = I\alpha$
Impulse	Change in linear momentum	Impulse-momentum theorem	$\Delta \vec{p} = \vec{F}_{ave} \Delta t$
Rotational impulse	Change in angular momentum		$\Delta L = \tau \Delta t$
Stress	Strain	Hooke's Law	Stress \propto Strain $\vec{F} = -k\vec{x}$

We talked about idea situations

- Frictionless surfaces
- No air resistance
- Massless ropes
- Massless pulleys
- Massless springs
- Ideal springs
- Elastic collisions
- Rigid bodies
- Ideal fluids

There were two main mathematical systems.

Scalars

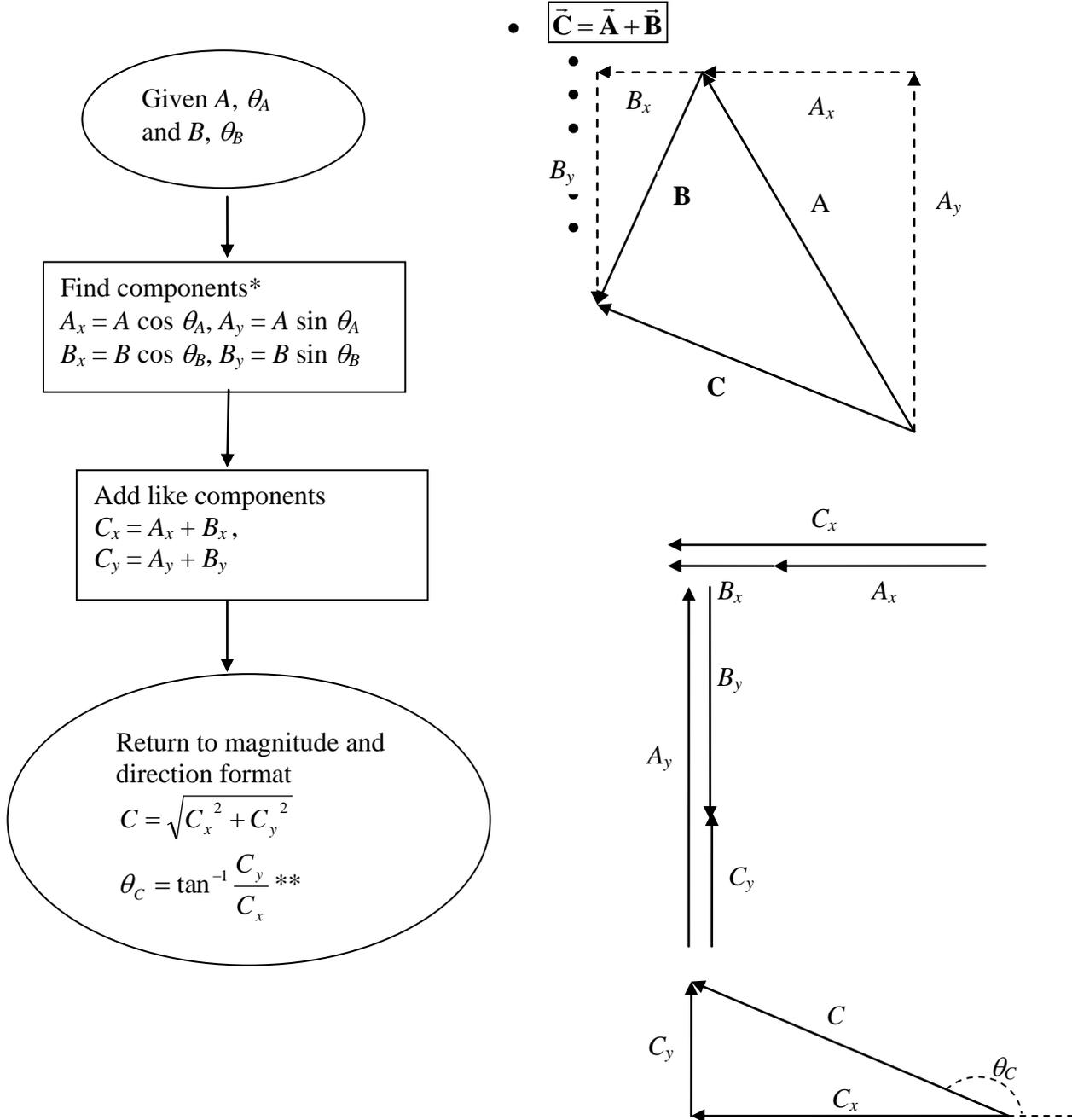
- We use our familiar methods of mathematics.

Vectors "The first thing we learn; the last thing we want to do."

- Never deal with vectors. We deal with their components.

We do not deal with vectors, we deal with their components.

Here is an algorithm for adding vectors. The diagram is Figure 3.9 on page 61.



*Be careful with the angles given. The equations hold for angles measured counterclockwise from the +x-axis.

**Be careful with \tan^{-1} function on your calculator. If the x-component is negative, add 180° to the value found by your calculator.

Chapters

1. Introduction
2. Motion along a line
3. Motion in a plane
4. Force and Newton's laws of motion
5. Circular motion
6. Conservation of energy
7. Linear momentum
8. Torque and angular momentum
9. Fluids
10. Elasticity and oscillations
11. Waves
12. Sound

We did many demonstrations in lecture. Hopefully they helped you to see the application of many physical principles. Combined with your experience, you can see physics around you.

What were your favorite demos?

A basketball travels through physics.

Final Exam Topics

1. Vectors
2. Equations of uniformly accelerated motion
3. Newton's Second Law
4. Uniform Circular Motion
5. Work-energy theorem
6. Impulse-momentum theorem
7. Equilibrium (a ladder problem)
8. Newton's second law for rotational motion and rotational kinematics
9. Equation of continuity and Bernoulli's equation
10. Simple harmonic motion
11. Traveling waves
12. Standing waves

I hope you are ready for PHY2054. I think you are.