

**\*\*Write new office hours on board**

## 1) Points/Vectors

- Addition and subtraction (mention type checking)
- Magnitude
- Normalization

## 2) Dot Product / Projections

- Define dot product and show law of cosines
  - \*Talk about principal value set of cosine and how it flips back around when passing 180
- Stress how this concept will be used again and again in the course and how it generalizes to high dimensions
- Raffle point question (First 5):** Project (1, 2, 3) onto (4, 1, 2)  
Answer:  $(4/7)(4, 1, 2) = (16/7, 4/7, 8/7)$

## 3) Cross Products Intro

- Simply define: more detail next time
- A note on coordinate systems and the right hand rule (anecdote)

## 4) Line Segment Intersection

- Make the point that using slope and y intercept can be numerically unstable near vertical slopes

## 4) Point Inside Triangle (BQOTD)

## 5) Mini Assignment 1 / Intro To Javascript

- \*Take anonymous poll while I'm setting up: who has seen HTML?
- Show GUI example
- Implement the big question of the day in Javascript real time
  - \*Fallback: Implement vector projection