

427L: group problems for February 2, 2022

1. Let A be the point $(2, 3, -1)$ in \mathbb{R}^3 , and let \vec{u} be the vector $\langle -1, 1, -2 \rangle$.

Find a pair of equations describing two planes which intersect in the line in \mathbb{R}^3 given by the set

$$\{A + t\vec{u} : t \in \mathbb{R}\}.$$

Write your equations below:

2. Write down the equations found by another group for problem 1. (Try and find a group which wrote down equations that are different from yours). Ask them to explain how they found their equations.
3. Find a parameterization for the line given by the intersection of the two planes found by the other group. Is it the same as the parameterization given in problem 1? Does it still determine the same set as in problem 1?
4. **Challenge:** How many dimensions does the set of solutions to problem 1 have? In other words, is the set of solutions a curve (1-dimensional), a surface (2-dimensional), or something more complicated?