

VECTORS

Chapter 9 –Points Lines and Planes

(Material adapted from Chapter 9 of your text)

$A\infty\Omega$
MATH@TD

Chapter 9 – Points Lines and Planes

Contents with suggested problems from the Nelson Textbook (Chapter 9)

9.1 Intersecting Lines and Planes – Pg. 174 – 178

READ ex. 4, 5, 6 Pg. 492 - 495

Pg. 496 – 498 #1, 2, 4 – 9, 11, 12, 15 (beautiful)

9.2 Systems of Equations – Pg 179 – 182

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9.3 Systems of Equations and Matrices – Pg 183 – 186

Pg. 552 – 553 #3, 7b, 8b: Pg. 595#3acf, 4

9.5 9.6 Distances and Vectors – Pg. 187 – 191

Pg. 540 – 541 #5 – 8 (read Ex. 4 Method 2 for #8)

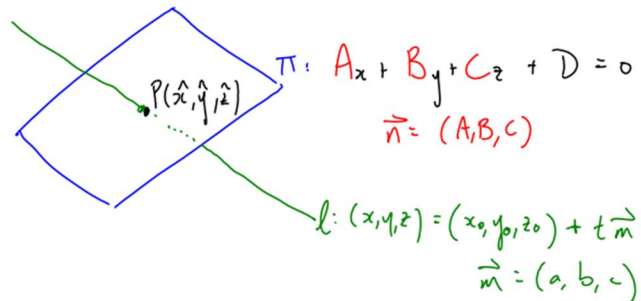
Pg. 550 #2, 3, 5 (read Ex. 2 pg. 544 for #2)

9.1 Intersecting Lines and Planes

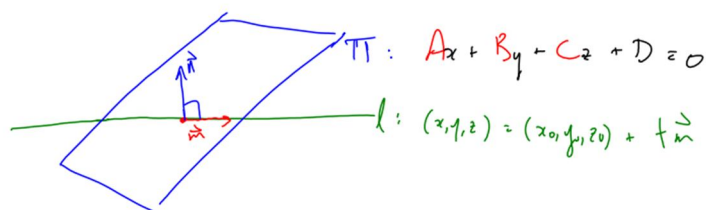
Intersecting Lines with Planes

There are three possibilities. Consider the sketches:

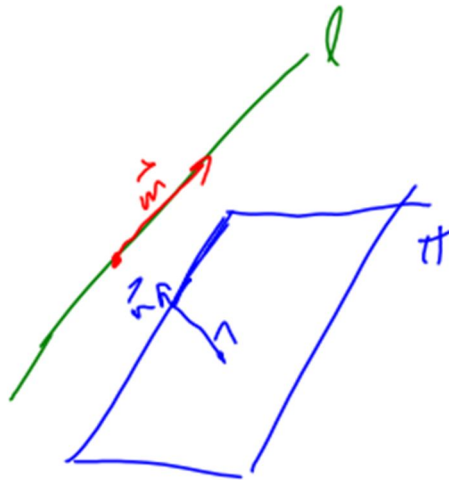
1)



2)



3)



Example 9.1.1

Determine any points of intersection between

$$l: (x, y, z) = (1, 2, 3) + t(1, -2, 5)$$

$$\pi: 2x + y - z - 21 = 0$$

Example 9.1.2

Determine any points of intersection of:

$$l: x = 2 - t, y = 3 + 2t, z = -1 + t$$

$$\pi: 3x + y + z + 5 = 0$$

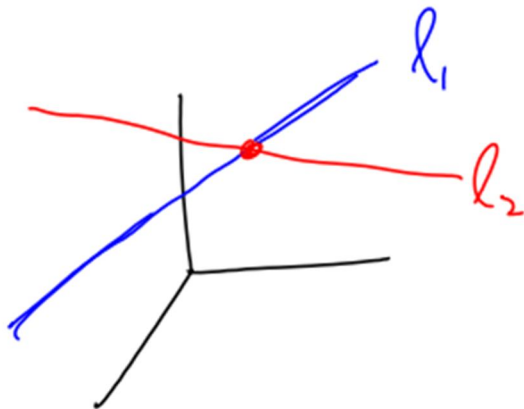
Read Examples 1,2 and 3 on pages
489 – 491 for different methods

Intersecting Lines with Lines

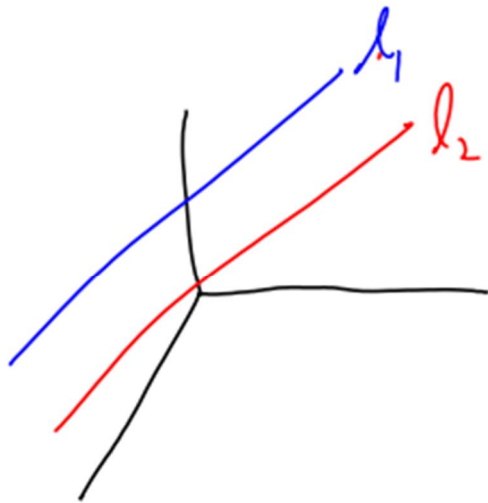
You have found the intersection of lines in \mathbb{R}^2 many times in the past (using Substitution or Elimination for example). So we will work in \mathbb{R}^3 to keep things interesting. In \mathbb{R}^3 there are **four** possibilities for intersecting lines: two for having an intersection, and two when the lines do not intersect.

Consider the sketches:

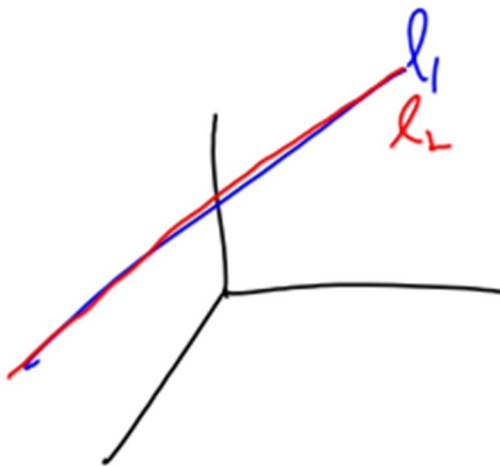
1)



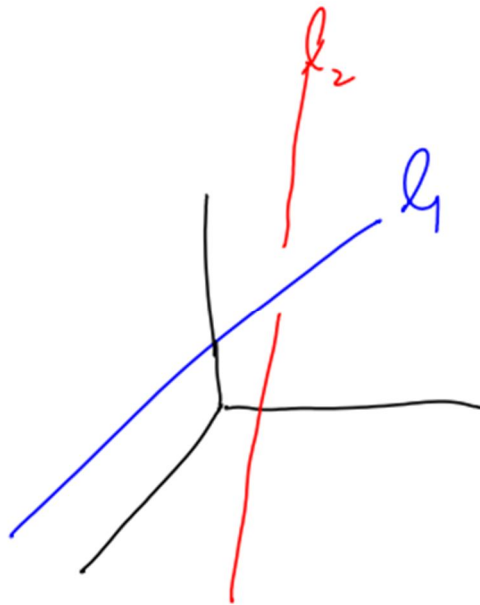
2)



3)



4)



Class/Homework for Section 9.1

READ ex. 4, 5, 6 Pg. 492 - 495

Pg. 496 – 498 #1, 2, 4 – 9, 11, 12, 15 (beautiful)