VECTORS

Chapter 9 –Points Lines and Planes

(*Material adapted from Chapter 9 of your text*)

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MATH@TD

Chapter 9 – Points Lines and Planes

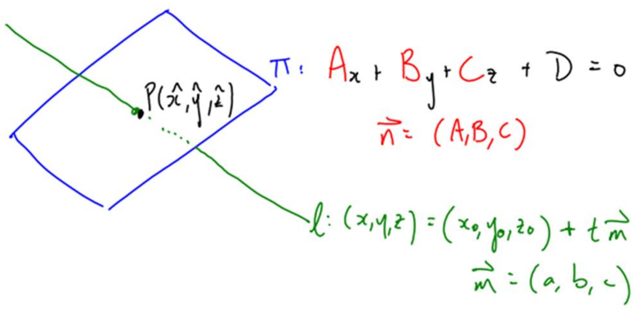
Contents with suggested problems from the Nelson Textbook (Chapter 9)

9. 1 Intersecting Lines and Planes

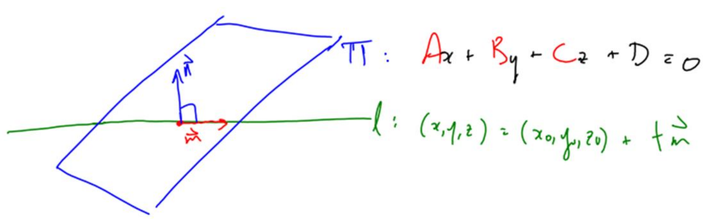
Intersecting Lines with Planes

There are three possibilities. Consider the sketches:

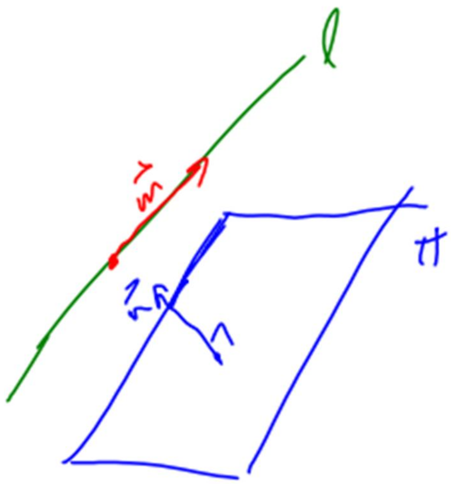
1)



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:

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

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

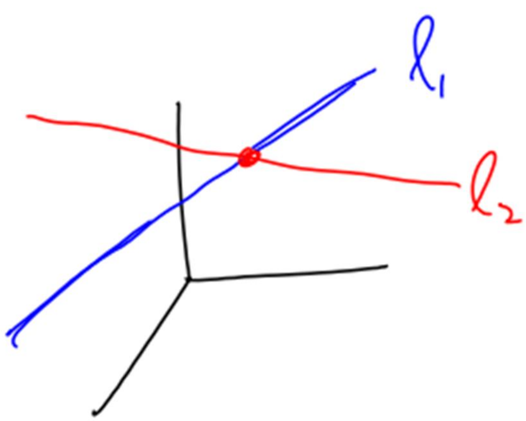
Read Examples 1,2 and 3 on pages 489 – 491 for different methods

Intersecting Lines with Lines

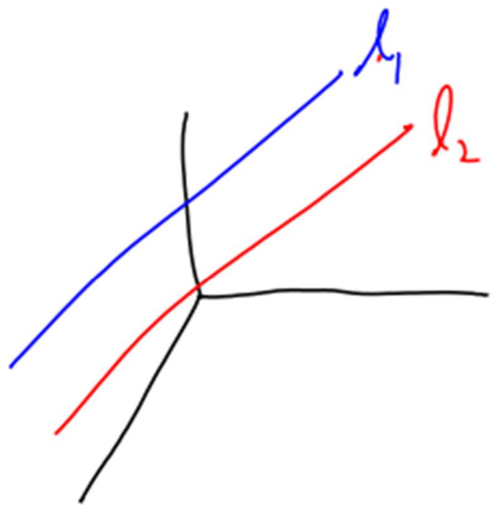
You have found the intersection of lines in $\mathbb{R}^2$ many times in the past (using Substitution or Elimination for example). So we will work in $\mathbb{R}^3$ to keep things interesting. In $\mathbb{R}^3$ there are **four** possibilities for intersecting lines: two for having an intersection, and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

Consider the sketches:

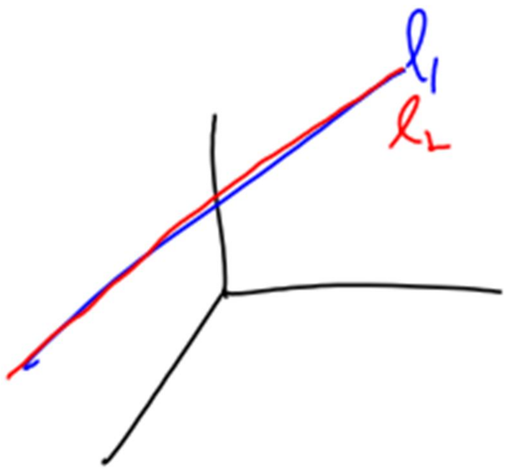
1)



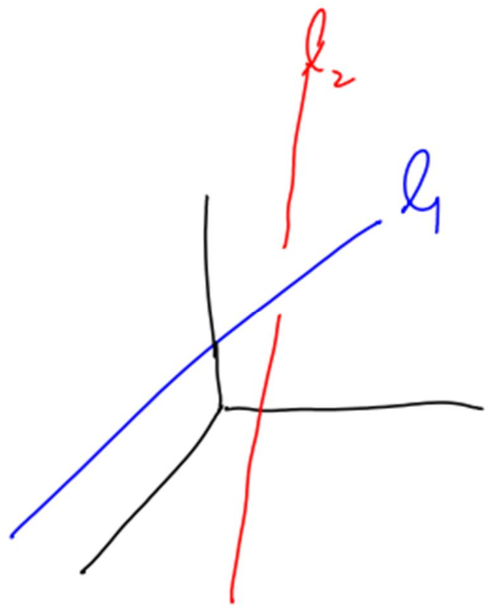
2)



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)