Assignment -1

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The python code and Latex file can be found here:

https://github.com/Sairam13001/AI5006/tree/master/Assignment_1

Problem 1:

Find the distance between the two planes

(2 3 4)x = 4 ------(i) & (4 6 8)x = 12 -------(ii).

Solution:

- The given two planes are parallel as the perpendicular vectors of the planes (2 3 4) and (4 6 8) are proportional.

  i. e, 2/4 = 3/6 = 4/8.

- Multiplying equation (i) by 2 we get, (4 6 8)x = 8.

- Given two parallel planes P1: a x + by + cz + d1 = 0 and P2: ax + by + cz + d2 = 0, We can find the distance between these parallel planes using the formula

  |d1-d2| /sqrt(a^2 + b^2 +c^2).

  Which can be written in python as

  distance = abs(d1 - d2)/np.linalg.norm(n)

- So, the distance between the planes is

|8 - 12| / sqrt(16+36+64) = 4/sqrt(116) = 2/sqrt(29).