Assignment 1

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***Abstract*—This document explains the concept of distance between two points.**

Download the python code from

https://github.com/ee17btech11034/AI5106/blob/main/Assignment_1/AI_assignment_1.py

and latex-tikz codes from

https://github.com/ee17btech11034/AI5106/blob/main/Assignment_1/assignment_1.tex

1 Problem

Calculate the distance between two points P(-2,4) and Q(3,-5).

2 Explanation

Two point are P(x_1, y_1) and Q(x_2, y_2). The distance between both points is d.

$$\mathbf{Z} = \mathbf{P} - \mathbf{Q} \tag{2.0.1}$$

Then the distance between P and Q is given by:

$$d = \|\mathbf{Z}\| \tag{2.0.2}$$

$$d = \left\|\mathbf{P} - \mathbf{Q}\right\| \tag{2.0.3}$$

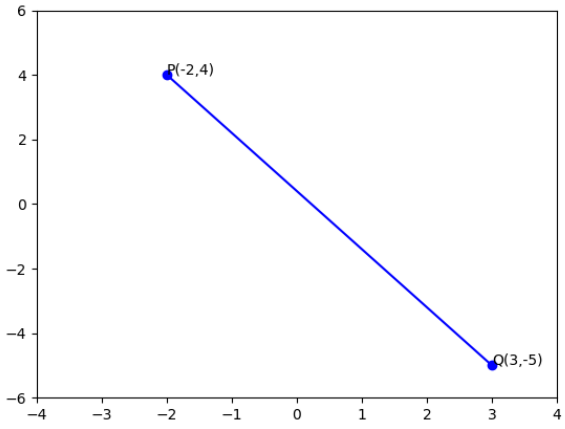

Fig. 0: Line between two points

3 Solution

So, the distance between given points P and Q is:

$$d = \sqrt{(-2-3)^2 + (4-(-5))^2} \tag{3.0.1}$$

$$d = \sqrt{25+81} \tag{3.0.2}$$

$$d = \sqrt{106} \tag{3.0.3}$$

So, the distance between P(-2,4) and Q(3,-5) is :

$$d = \sqrt{106} \tag{3.0.4}$$