

Answer on Question #56371 – Math – Analytic Geometry
Question

Find x so that the length of the segment joining $P_1(x, 3)$ and $P_2(-1, 4)$ is square root of 10.

Solution

$$|P_1P_2| = \sqrt{10} = \sqrt{(x - (-1))^2 + (3 - 4)^2} = \sqrt{(x + 1)^2 + 1} = \sqrt{10} \Rightarrow$$

$$x^2 + 2x + 1 + 1 = 10$$

$$x^2 + 2x - 8 = 0$$

$$x_{1,2} = \frac{-2 \pm \sqrt{4 + 4 \cdot 8}}{2} = -1 \pm \sqrt{9} = \begin{bmatrix} -2 \\ -4 \end{bmatrix}$$

hence, two answers are possible.

Answer: $x_1 = -2, x_2 = -4$.