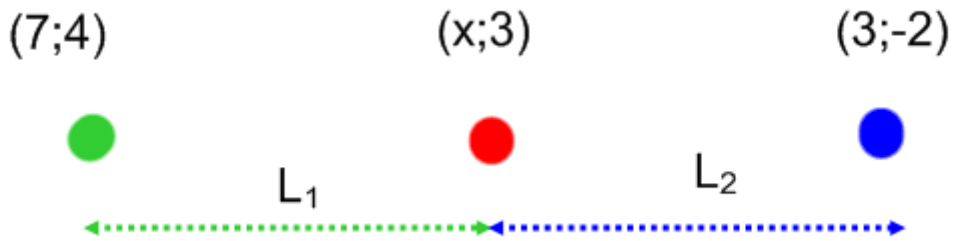
Answer on Question #53147 – Math – Analytic Geometry

If the point (x, 3) is equidistant from (3, -2) and (7, 4), find x.

Solution



$$L_1 = \sqrt{(x-7)^2 + (3-4)^2}$$

$$L_1 = \sqrt{x^2 - 14x + 49 + 1}$$

$$L_1 = \sqrt{x^2 - 14x + 50}$$

$$L_2 = \sqrt{(3-x)^2 + (-2-3)^2}$$

$$L_2 = \sqrt{x^2 - 6x + 9 + 25}$$

$$L_2 = \sqrt{x^2 - 6x + 34}$$

$$L_2 = L_1$$

$$\sqrt{x^2 - 6x + 34} = \sqrt{x^2 - 14x + 50}$$

$$x^2 - 6x + 34 = x^2 - 14x + 50$$

$$14x - 6x = 50 - 34$$

$$8x = 16$$

$$x = 2$$

Answer: x=2.