

Assignment 1

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Ex. 2.5 – Check whether (5, -2), (6,4), (7, -2) are the vertices of a isosceles triangle

Solution –

Let's take the 3 points on a triangle ABC, where:

$$A = (5, -2)$$

$$B = (6, 4)$$

$$C = (7, -2)$$

Now to understand whether this is an isosceles triangle or not we need to check the distances between these points, that is AB, BC, CA.

To procure those values we need to use the distance formula which is

For 2 points $m = (x_1, y_1)$ and $n = (x_2, y_2)$

Square root of $(x_2 - x_1)^2 + (y_2 - y_1)^2$

Now applying this formula on the triangle

$$AB = \text{square root of } (6-5)^2 + (4 - (-2))^2 = \text{square root of } (1)^2 + (6)^2 = \text{root } 35$$

(not -35 as distance will always be in positive)

$$BC = \text{square root of } (7-6)^2 + ((-2) - 4)^2 = \text{square root of } (1)^2 + (-6)^2 = \text{root } 35$$

$$AC = \text{square root of } (7-5)^2 + ((-2) - (-2))^2 = \text{square root of } 4 = 2$$

Using this formula, we can understand that $AB = BC$

With this we can understand that the triangle ABC is an Isosceles triangle

