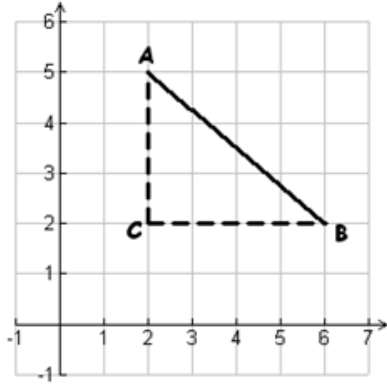


2.4 Distance Between Points/Length of a Line Segment

Recall:

The Pythagorean Theorem: In a right angle triangle, the length of the hypotenuse squared is equal to the sum of the lengths of the other two sides squared.

What is the distance between the points A(2,5) and B(6,2)?



We can create a right triangle and use the Pythagorean Theorem.

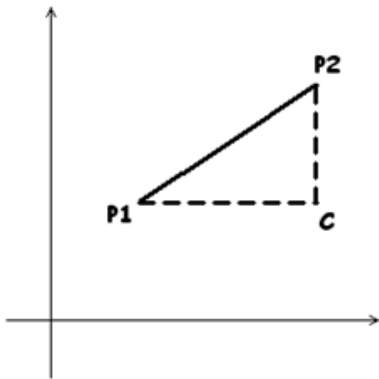
Add the point C(,).

Distance from A to C =

Distance from B to C =

$$AB^2 = AC^2 + BC^2$$

We can derive a general formula using the same method.



We want to find the distance between P_1 and P_2 .

Let the coordinates be $P_1(,)$ and $P_2(,)$.

We need to find the coordinates of point C:

C has the same ___-coordinate as P_2 -->

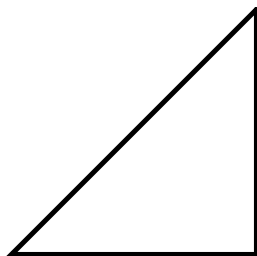
C has the same ___-coordinate as P_1 -->

$\therefore C(,)$

Distance from P_1 to C =

Distance from P_2 to C =

$$(P_1P_2)^2 = (P_1C)^2 + (P_2C)^2$$



Distance Formula:

Ex. 1 What is the distance from the origin to the point $(-1,-4)$?

Ex.2 Find the length of the line segments with the following endpoints.

a) A $(-3,0)$ and B $(-3,2)$

b) C $(-4,7)$ and D $(3,1)$

Ex. 3 Determine the length of the median from vertex A of a triangle whose vertices are A $(-2,6)$, B $(5,-3)$, and C $(-7,7)$.

Attachments

act1.mov

act3.mov