

Finding Distance

Example

Find the distance between A(-2, 1) and B(3, 4).

$$\begin{array}{ccccc} A(-2, 1) & B(3, 4) & & & AB = \sqrt{(3 - -2)^2 + (4 - 1)^2} \\ \uparrow & \uparrow & \uparrow & \uparrow & = \sqrt{5^2 + 3^2} \\ x_1 & y_1 & x_2 & y_2 & = \sqrt{25 + 9} \\ & & & & = \sqrt{34} \text{ units} \end{array}$$

1 Find the distance between the following pairs of points:

a A(3, 1) and B(5, 3)

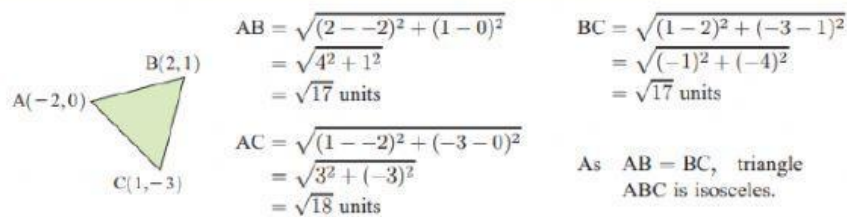
b C(-1, 2) and D(6, 2)

c O(0, 0) and P(-2, 4)

d E(8, 0) and F(2, 0)



Consider the points A(-2, 0), B(2, 1) and C(1, -3).
Determine if the triangle ABC is equilateral, isosceles or scalene.



2 Classify triangle ABC as either equilateral, isosceles or scalene:

a A(3, -1), B(1, 8), C(-6, 1)

b A(1, 0), B(3, 1), C(4, 5)

Example

Find b given that A(3, -2) and B(b , 1) are $\sqrt{13}$ units apart.

From A to B, $x\text{-step} = b - 3$
 $y\text{-step} = 1 - -2 = 3$

$$\begin{aligned}\therefore \sqrt{(b-3)^2 + 3^2} &= \sqrt{13} \\ \therefore (b-3)^2 + 9 &= 13 \\ \therefore (b-3)^2 &= 4 \\ \therefore b-3 &= \pm 2 \\ \therefore b &= 3 \pm 2 \\ \therefore b &= 5 \text{ or } 1.\end{aligned}$$

Find a given that:

a P(2, 3) and Q(a , -1) are 4 units apart

b P(-1, 1) and Q(a , -2) are 5 units apart

