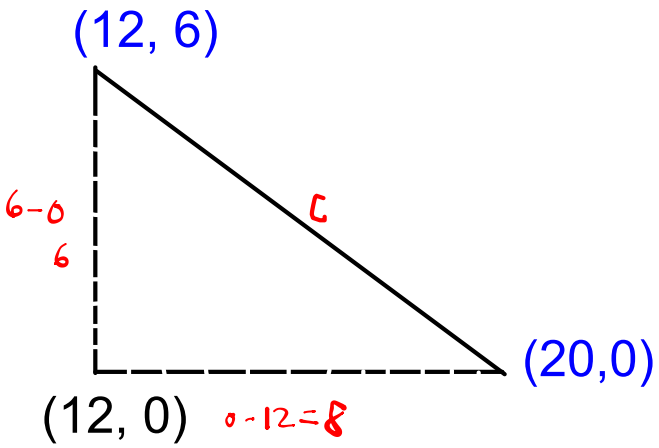
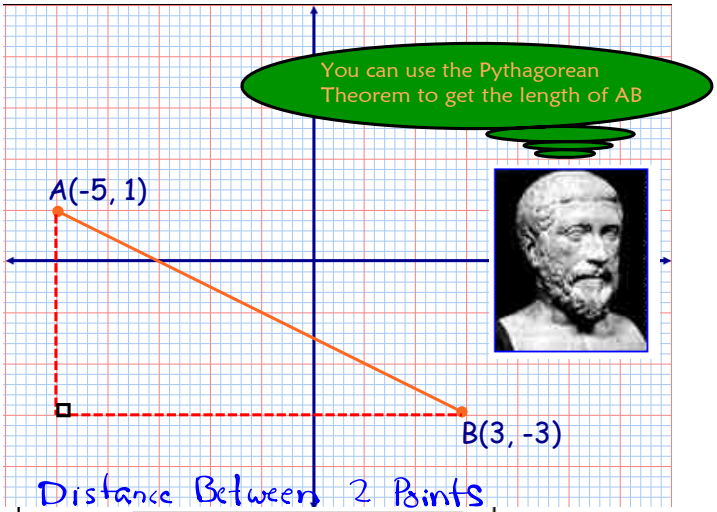
# Find the distance between (12, 6) and (20, 0).




$c^2 = a^2 + b^2$
$= 6^2 + 8^2$
$= 36 + 64$
$= 100$
$c = \sqrt{100}$
$= 10$

## Distance between two points




Distance Between 2 Points

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Example:

$d(AB) = \sqrt{(-5-3)^2 + (1-(-3))^2}$
$= \sqrt{(-8)^2 + 4^2}$
$= \sqrt{64+16}$
$= \sqrt{80}$
$\doteq 8.9$ $4\sqrt{5}$

$\sqrt{80}$
$\sqrt{16 \times 5}$
$4\sqrt{5}$

## Examples...

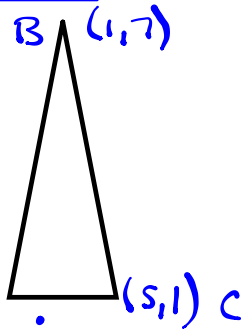
#1. Use the distance formula to show that the triangle with vertices A(-3, 1); B(1, 7) & C(5, 1) is iscosceles.

$\overline{AC} = 5-(-3)$
$= 8$

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d(AB) = \sqrt{(-3-1)^2+(1-7)^2}$
$= \sqrt{(-4)^2+(-6)^2}$
$= \sqrt{16+36}$
$= \sqrt{52}$
$= 2\sqrt{13}$
$\doteq 7.2$

$d(BC) = \sqrt{(1-5)^2+(7-1)^2}$
$= \sqrt{(-4)^2+(6)^2}$
$= \sqrt{16+36}$
$= \sqrt{52}$
$\doteq 7.2$




The Δ is isosceles.

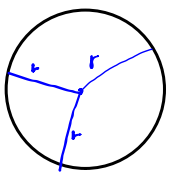
#2. Find the distance between A(-2, 1) & B(8, 3)

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d(AB) = \sqrt{(8-(-2))^2+(3-1)^2}$
$= \sqrt{10^2+2^2}$
$= \sqrt{100+4}$
$= \sqrt{104}$
$\doteq 10.2$

$\sqrt{104}$
$\sqrt{4 \times 26}$
$2\sqrt{26}$

#3. Show that the points A(5, -1); B(2, 8) & C(-2, 0) lie on a circle whose center is O(2, 3)




$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d(AO) = \sqrt{(5-2)^2+(-1-3)^2}$
$= \sqrt{3^2+(-4)^2}$
$= \sqrt{9+16}$
$= \sqrt{25}$
$= 5$

$d(BO) = \sqrt{(2-2)^2+(3-8)^2}$
$= \sqrt{0^2+(-5)^2}$
$= \sqrt{0+25}$
$= 5$

$d(CO) = \sqrt{(-2-2)^2+(0-3)^2}$
$= \sqrt{(-4)^2+(-3)^2}$
$= \sqrt{16+9}$
$= \sqrt{25}$
$= 5$

# Homework...

Worksheet - Distance_Midpoint(2).pdf

## Sec. 6.6 - LEFT SIDE

# 2 (a) , (b), (d)

#4

# 6

2. Distance from the origin
   a) (6,8) b) (-1,8) d) $\sqrt{3},1$

4. Distance from (1,4)
   a) (-1,7) b) (-2,6) c) (4,6)

6. $\triangle$ P(-1,2) Q(2,6) R(-4,4)
   a) Find the perimeter
   b) Classify the $\triangle$.

## Attachments

Worksheet - Distance_Midpoint(2).pdf