Distances between points

Examples

**Find the distance between**

$(3,4)$ and $\left(5,7\right)$

$(5,1)$ and $\left(6,-3\right)$

$(0,-2)$ and $\left(-1,3\right)$

Test Your Understanding

**Find the distance between:**

$(1,10)$ and $\left(4,14\right)$

$(3,-1)$ and $\left(0,1\right)$

$(-4,-2)$ and $\left(-12,4\right)$

**Area of Shapes**

$$x$$

$$y$$

$$x+2y=4$$

$$y=3x$$

$$P$$

$$Q$$

$$O$$

Example 1

The diagram shows two lines with equations $y=3x$

and $x+2y=4$, which intersect at the point $P$.

a)Determine the coordinates of $P$.

b) The line $x+2y=4$ intersects the $x$-axis at the point $Q$. Determine the area of the triangle $OPQ$.

When $y=0, x=4$

$$x$$

$$2y=x+4$$

$$x+y=8$$

$$P$$

$$O$$

$$Q$$

$$R$$

Example 2

a)Determine the length of $PQ$

b) Determine the area $PQR$.

**Test Your Understanding:**

a) Determine the coordinate of $P$.

b) Determine the area of $PQR$.

c) Determine the length $PQ$**.**

*Extension*

*[MAT 2001 1C]*

The shortest distance from the origin to the line $3x+4y=25$ is what?

Exercise 5G Page 102/103