y

Quadrant II
$x < 0, y > 0$

Quadrant I
$x > 0, y > 0$

x

Quadrant III
$x < 0, y < 0$

Quadrant IV
$x > 0, y < 0$

$$d^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$$

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

y

(x_2, y_2)

d

$y_2 - y_1$

(x_1, y_1) $x_2 - x_1$ (x_2, y_1)

x
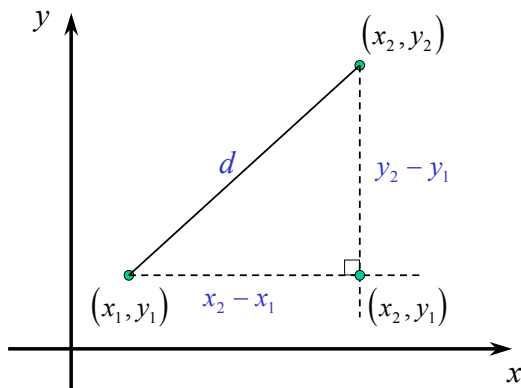
Find distance between the points
(3, 8) and (-1, 2)

$$P_1 = (3,8), \ P_2 = (-1,2)$$

$$d(P_1, P_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d(P_1, P_2) = \sqrt{(-1-3)^2 + (2-8)^2}$$

$$d(P_1, P_2) = \sqrt{(-4)^2 + (-6)^2}$$

$$d(P_1, P_2) = \sqrt{16 + 36} \ = \sqrt{52} = 2\sqrt{13}$$

Graph $y = -3x + 5$

$x = 0$ $y = -3(0) + 5 = 5$

$x = 1$ $y = -3(1) + 5 = -3 + 5 = 2$

$x = 5$ $y = -3(5) + 5 = -15 + 5 = -10$

$x = -1$ $y = -3(-1) + 5 = 3 + 5 = 8$

x	y
0	5
1	2
5	-10
-1	8

The points, if any, at which a graph crosses or touches the coordinate axes are called the **intercepts**.