

Chapter 2: Graphs and Functions

Section 2.1: The Coordinate Plane

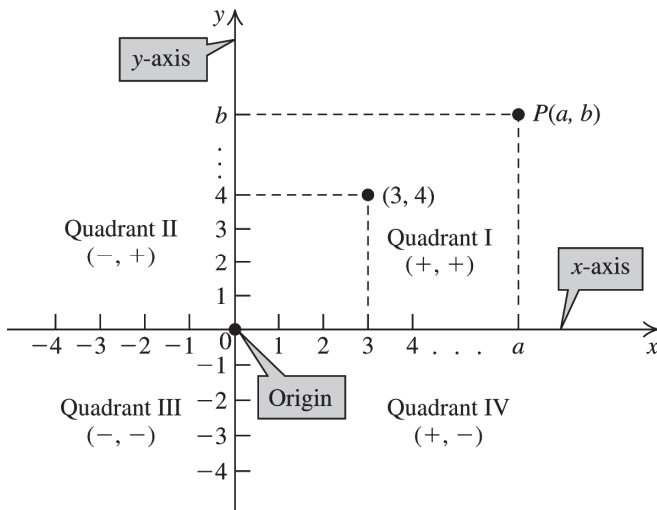
Key Topics: coordinate plane, distance formula, midpoint formula

A pair of real numbers in which the order is specified is called an _____.

The horizontal line (with positive numbers to the right) is usually called the _____, and the vertical line (with positive numbers up) is usually called the _____.

Their point of intersection is called the _____.

The axes divide the plane into four regions called _____.



Graph $(-5, 6)$ in the xy -plane.

THE DISTANCE FORMULA IN THE COORDINATE PLANE

Let $P = (x_1, y_1)$ and $Q = (x_2, y_2)$ be any two points in the coordinate plane. Then the distance between P and Q , denoted $d(P, Q)$, is given by the **distance formula**:

$$d(P, Q) = \underline{\hspace{2cm}}$$

Find the distance between $(-1, 6)$ and $(5, -2)$.

(a) $\sqrt{34}$

(b) 34

(c) 100

(d) 10

THE MIDPOINT FORMULA

The coordinates of the midpoint $M = (x, y)$ on the line segment joining $P = (x_1, y_1)$ and $Q = (x_2, y_2)$ are given by:

$$M = (x, y) = \underline{\hspace{2cm}}.$$

Find the midpoint of the segment whose endpoints are $(4, -3)$ and $(-2, 1)$.