

7.1.2 QUADRANTS

Assume that a coordinate system has been established in the plane. Then the whole plane with the exception of the coordinate axes, can be divided into four equal parts, called quadrants. All points with both coordinates positive form the first quadrant, called quadrant I, in the upper-right-hand corner (see Fig. 2-4).

Quadrant II consists of all points with negative x coordinate and positive y coordinate. Quadrants III and IV are also shown in Fig. 2-4.

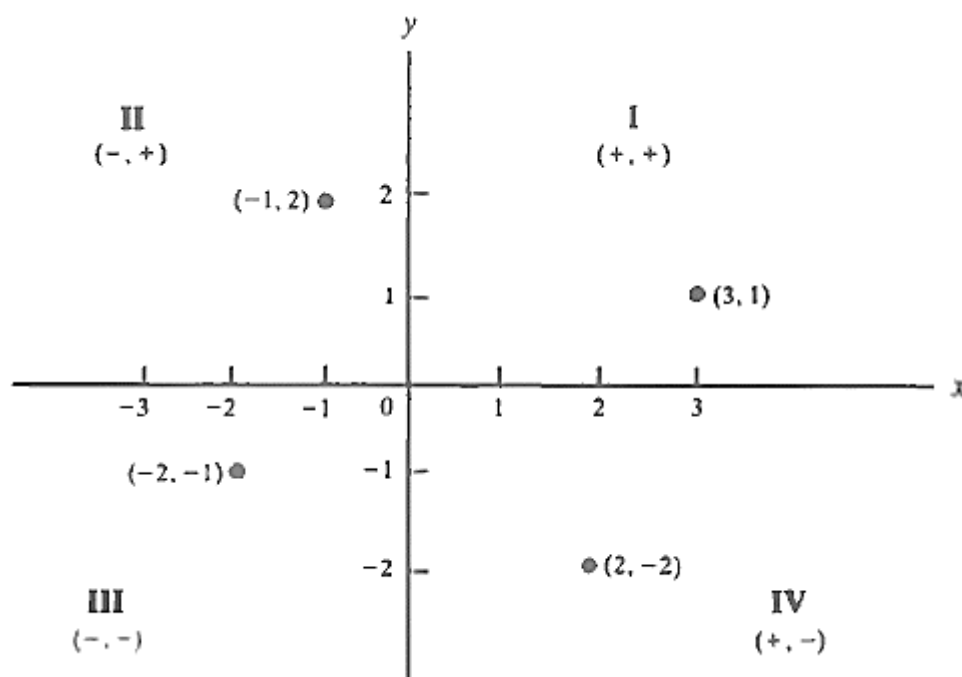


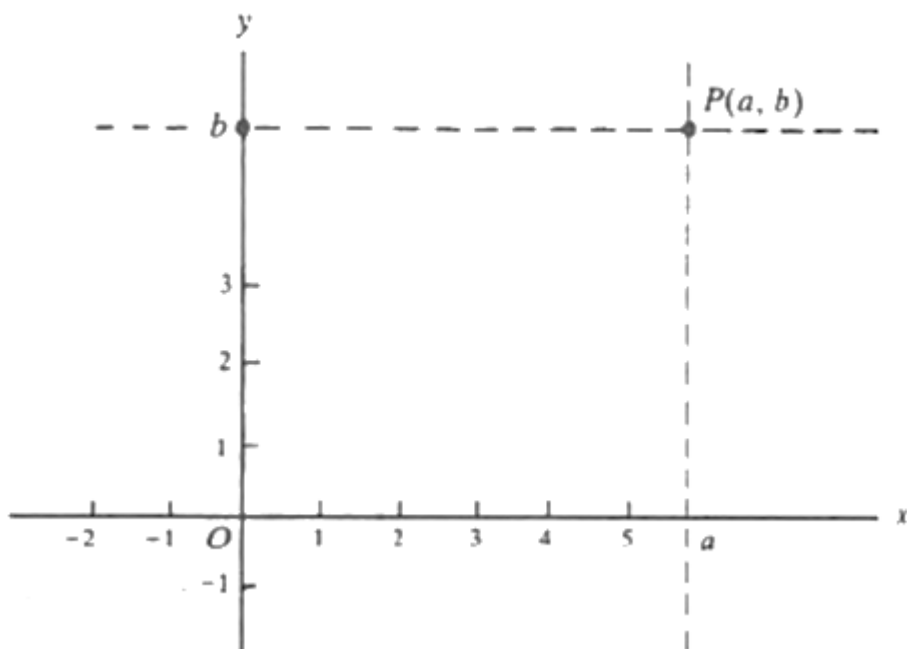
Figure:

The points on the x axis have coordinates of the form $(a, 0)$. The y axis consists of the points with coordinates of the form $(0, b)$.

Given a coordinate system, it is customary to refer to the point with coordinates (a, b) as “the point (a, b) .” For example, one might say, “The point $(0, 1)$ lies on the y axis.”

7.1.3 RECTANGULAR COORDINATE SYSTEMS

In any plane P choose a pair of perpendicular lines. Let one of the lines be horizontal. Then the other line must be vertical. The horizontal line is called the x axis, and the vertical line the y axis.



Now choose linear coordinate systems on the x axis and the y axis satisfying the following conditions: The origin for each coordinate system is the point O at which the axes intersect. The x axis is directed from left to right, and the y axis from bottom to top. The part of the x axis with positive coordinates is called the positive x axis, and the part of the y axis with positive coordinates is called the positive y axis.

We shall establish a correspondence between the points of the plane \mathcal{P} and pairs of real numbers.