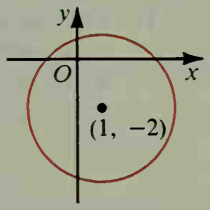
Theorem 13-2

An equation of the circle with center (a, b) and radius r is

$$(x - a)^2 + (y - b)^2 = r^2.$$

Example 4 Find the center and the radius of the circle with equation $(x - 1)^2 + (y + 2)^2 = 9$. Sketch the graph.



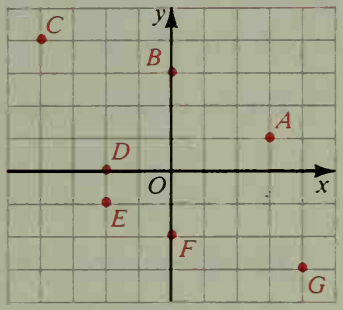
Solution $(x - 1)^2 + (y - (-2))^2 = 3^2$

The center is point $(1, -2)$ and the radius is 3.
The graph is shown at the right.

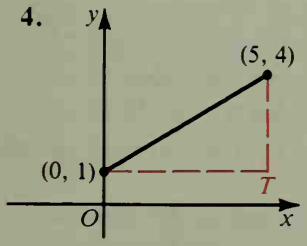
Classroom Exercises

1. What is the x-coordinate of every point that lies on a vertical line through C?
2. Which of the following points lie on a horizontal line through C?

   $(2, 4)$ $(2, -4)$ $(0, 4)$
   $(4, 3)$ $(15, 4)$ $(-4, 3)$
3. Find OD and BF.



In Exercises 4–9 state: a. the coordinates of T
b. the lengths of the legs of the right triangle
c. the length of the segment shown

4.


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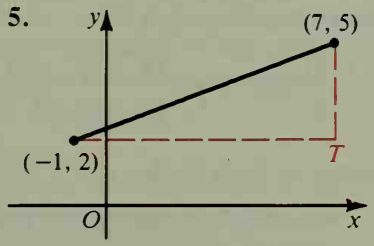

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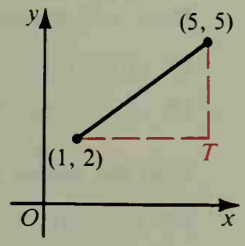

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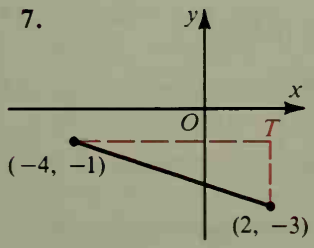
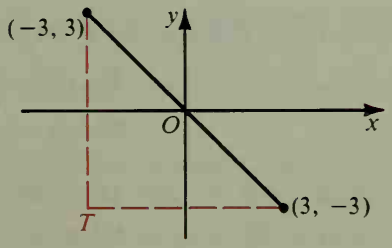


8.


9.