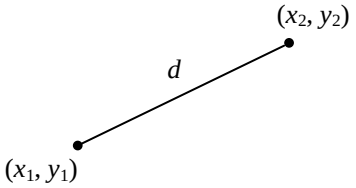
P.2 CARTESIAN COORDINATE SYSTEM

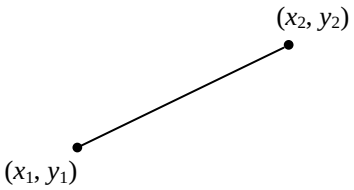
Learning Targets for P.2

1. Know and be able to use the distance formula
2. Know and be able to use the midpoint formula
3. Be able to identify a given equation as a circle
4. Be able to write the equation of a circle centered at (h, k) with a radius of r

Example 1: The distance formula is derived directly from the Pythagorean Theorem. Create a right triangle with the segment below, and solve for *d*.



Example 2: To find the midpoint of a segment simply find the average *x* and *y*-values of the endpoints.

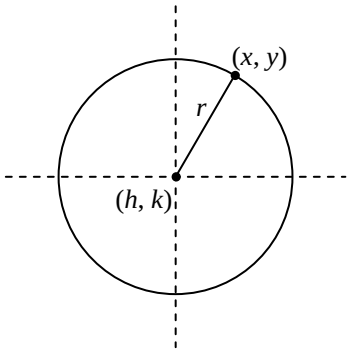


Example 3: Let the endpoints of a segment be (–2, 8) and (5, 7).

a) Find the length of the segment.

b) Find the midpoint of the segment.

Example 4: An equation of a circle whose center is at (h, k) can be written using the Pythagorean Theorem as well.



Example 5: Write an equation of the circle with radius 4 and whose center is at (0, –3).

Example 6: Sketch a graph of the equation $(x+1)^2+(y-4)^2=9$.