Homework 5

Distance, Midpoint, and Circles

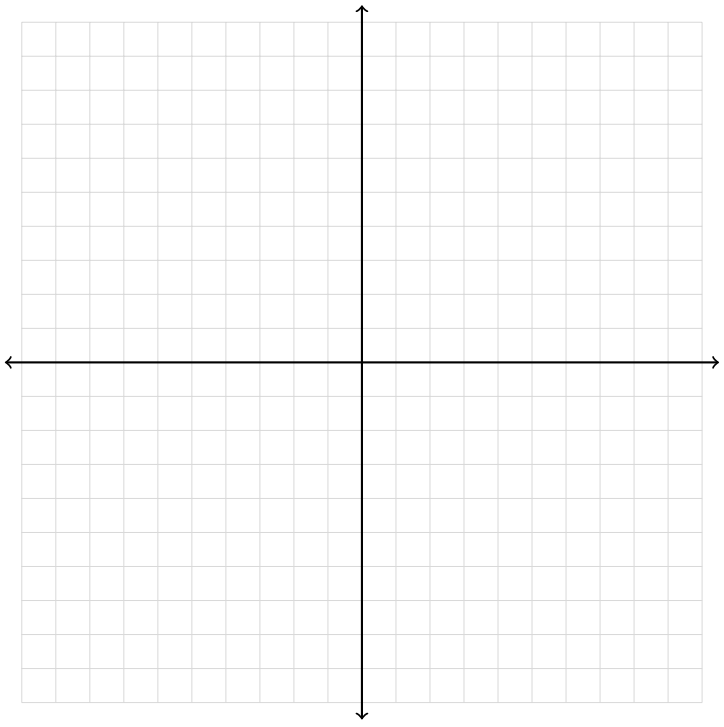
Name: _____

Show all work clearly. Simplify radicals when possible and graph neatly using the coordinate planes provided.

Part I: Plotting Points

1. Plot and label the following points on the coordinate plane.

   - Point $A(3, -5)$
   - Point $B(-7, 4)$
   - Point $C(0, 6)$
   - Point $D(-4, -3)$



Part II: Distance Formula

2. Find the distance between the following points.

   (a) $(2, 2)$ and $(5, -2)$

   (b) $(0, 2)$ and $(-2, 10)$

   (c) $(-3, -4)$ and $(5, 2)$

Part III: Midpoint Formula

3. Find the midpoint of each line segment.

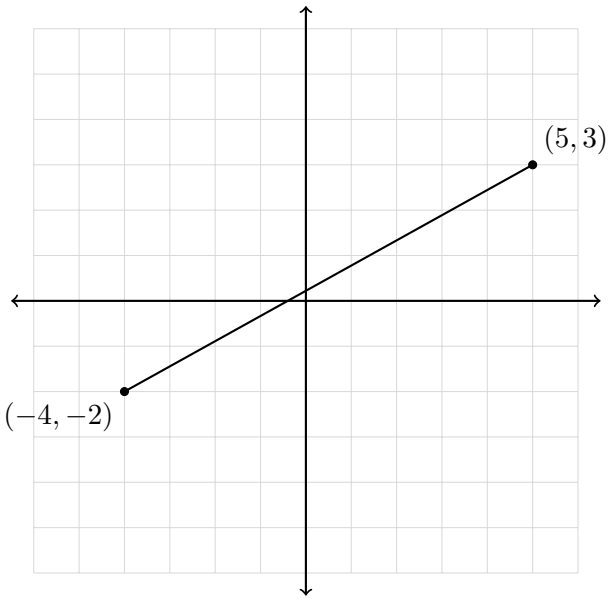
   (a) $(3, -2)$ and $(-5, 6)$

   (b) $(-2, 7)$ and $(5, -7)$

   (c) $(-8, -3)$ and $(4, 9)$

Part IV: Midpoint and Distance from a Graph

4. The endpoints of a line segment are shown on the graph below.



Find:

(a) The midpoint

(b) The distance between the points

Part V: Equations of Circles

5. Write the equation of each circle.

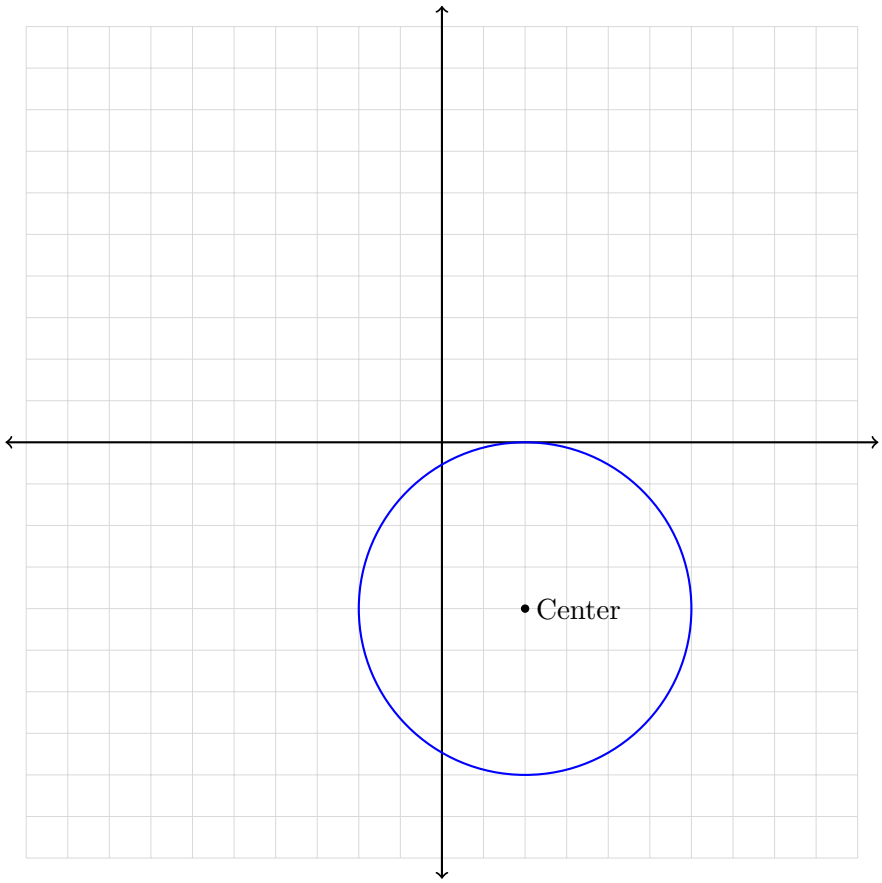
   (a) Center $(5, 3)$, radius $r = 3$

(b) Center $(-2, -4)$, radius $r = 5$

(c) Center $(0, 0)$, radius $r = 7$

Part VI: Equation of a Circle from a Graph

6. Use the graph below to determine the center and radius, then write the equation of the circle.



Part VII: Applications

7. A park is located at point $(2, 3)$ and a school is located at point $(10, 9)$. Find the distance between the two locations.

8. A circular fountain has center $(1, -2)$ and radius 6 feet.

   (a) Write the equation of the fountain.

   (b) Is the point $(7, -2)$ on the circle? Explain.