

Name: \_\_\_\_\_

## Circles in the Coordinate Plane

**Exercise 1:** Write an equation of each circle that has a diameter with the given point as center and the given value of  $r$  as the length of the radius.

1.  $(0,0)$ ,  $r = 3$
2.  $(1,3)$ ,  $r = 5$
3.  $(-2,0)$ ,  $r = 6$
4.  $(4,-2)$ ,  $r = 10$
5.  $(6,0)$ ,  $r = 9$
6.  $(-3,-3)$ ,  $r = 2$

**Exercise 2:** Write an equation of each circle that has a diameter with the given endpoints.

1.  $(-2,0)$  and  $(2,0)$
2.  $(0,-4)$  and  $(0,4)$
3.  $(2,5)$  and  $(9,13)$
4.  $(-5,3)$  and  $(3,3)$
5.  $(5,12)$  and  $(-5,12)$
6.  $(-5,9)$  and  $(-7,-7)$
7.  $(-7,3)$  and  $(9,10)$
8.  $(2,2)$  and  $(18,-4)$

**Exercise 3:** Find the center of each circle and graph each circle.

1.  $(x-2)^2 + (y-5)^2 = 4$
2.  $(x+4)^2 + (y-4)^2 = 36$
3.  $\left(x + \frac{3}{2}\right)^2 + (y-1)^2 = 25$
4.  $\left(x - \frac{5}{2}\right)^2 + \left(y + \frac{3}{4}\right)^2 = \frac{81}{25}$
5.  $2x^2 + 2y^2 = 18$
6.  $5(x-1)^2 + 5(y-1)^2 = 245$

**Exercise 4:** Point  $C(2,3)$  is the center of a circle and  $A(-3,-9)$  is a point on the circle. Write an equation of the circle.

**Exercise 5:** Does the point  $(4,4)$  lie on the circle whose center is at the origin and whose radius is  $\sqrt{32}$ ? Justify your circle.

**Exercise 6:** Is  $x^2 + 4x + 4 + y^2 - 2y + 1 = 25$  the equation of a circle? Explain why or why not.