

Name: _____

Key

Date: _____

Equations of Circles - Homework

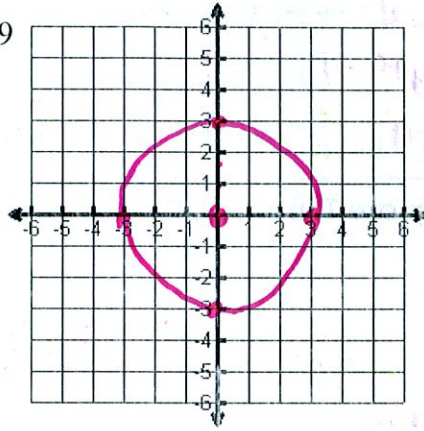
Graph the following circles. State the center and radius.

1. $x^2 + y^2 = 9$

$r = \sqrt{9} = 3$

Center: $(0,0)$

Radius: 3

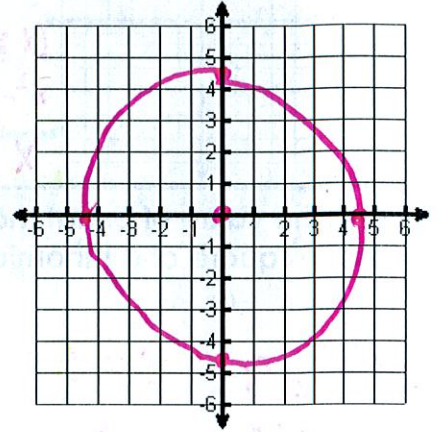


2. $x^2 + y^2 = 20$

$r = \sqrt{20} = 4.47$

Center: $(0,0)$

Radius: 4.47



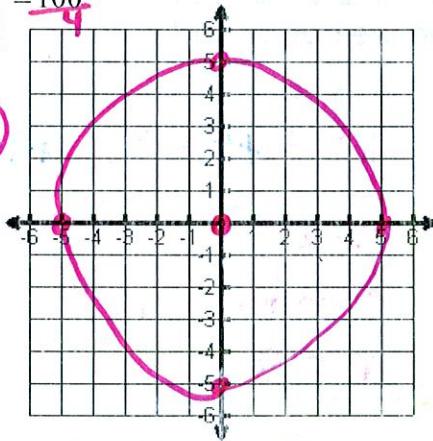
3. $4x^2 + 4y^2 = 100$

$x^2 + y^2 = 25$

Center: $(0,0)$

Radius: 5

$r = \sqrt{25} = 5$

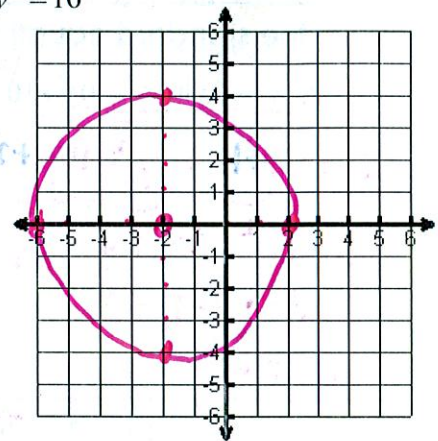


4. $(x+2)^2 + y^2 = 16$

Center: $(-2,0)$

Radius: 4

$r = \sqrt{16} = 4$

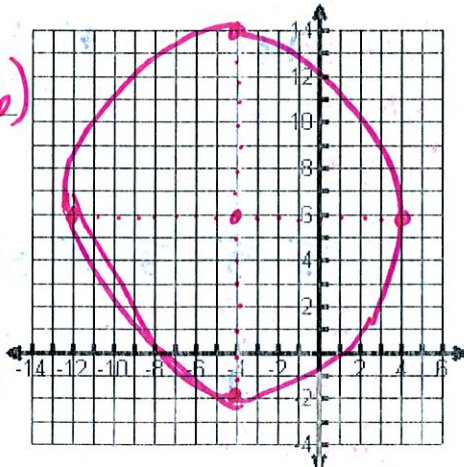


5. $(x+4)^2 + (y-6)^2 = 64$

Center: $(-4,6)$

Radius: 8

$r = \sqrt{64} = 8$

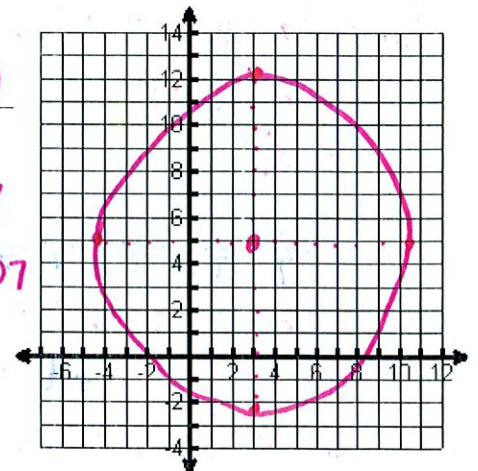


6. $(x-3)^2 + (y-5)^2 = 50$

Center: $(3,5)$

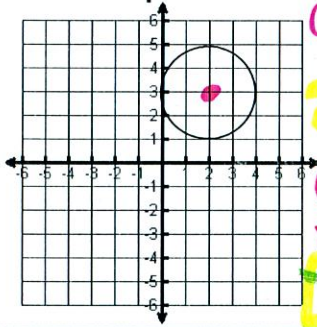
Radius: 7.07

$r = \sqrt{50} = 7.07$



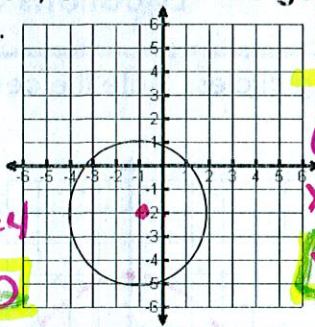
Write the equation of the circle in standard form. Then, convert to the general form.

7.



Center (2,3) $r = 2$
 $(x-2)^2 + (y-3)^2 = 4$
 $(x-2)(x-2) + (y-3)(y-3) = 4$
 $x^2 - 2x - 2x + 4 + y^2 - 3y - 3y + 9 = 4$
 $x^2 + y^2 - 4x - 6y + 9 = 0$

8.



Center (-1,-2) $r = 3$
 $(x+1)^2 + (y+2)^2 = 9$
 $(x+1)(x+1) + (y+2)(y+2) = 9$
 $x^2 + x + x + 1 + y^2 + 2y + 2y + 4 = 9$
 $x^2 + y^2 + 2x + 4y - 4 = 0$

Find the value of c that makes this a Perfect Square Trinomial, then write the expression as the square of a binomial.

9. $x^2 - 6x + c$

$(\frac{-6}{2})^2 = 9$ $c = 9$
 $x^2 - 6x + 9$
 $(x-3)^2$

10. $x^2 + 8x + c$

$(\frac{8}{2})^2 = 16$ $c = 16$
 $x^2 + 8x + 16$
 $(x+4)^2$

11. $x^2 - 7x + c$

$(\frac{-7}{2})^2 = \frac{49}{4}$ $c = \frac{49}{4}$
 $x^2 - 7x + \frac{49}{4}$
 $(x - \frac{7}{2})^2$

Write the standard equation for the circle. State the center and radius.

12. $x^2 + 2x + y^2 - 10y + 10 = 0$

$x^2 + 2x + 1 + y^2 - 10y + 25 = -10 + 1 + 25$
 $(x+1)^2 + (y-5)^2 = 16$
 Center (-1, 5)
 $r = 4$

13. $x^2 + y^2 - 4x + 6y + 9 = 0$

$x^2 - 4x + 4 + y^2 + 6y + 9 = -9 + 4 + 9$
 $(x-2)^2 + (y+3)^2 = 4$
 center (2, -3)
 $r = 2$

14. $x^2 + y^2 - 10x - 12y + 40 = 0$

$x^2 - 10x + 25 + y^2 - 12y + 36 = -40 + 25 + 36$
 $(x-5)^2 + (y-6)^2 = 21$
 Center (5, 6)
 $r = \sqrt{21}$

15. $\frac{2x^2}{2} + \frac{2y^2}{2} - 8x + 4y = -2$

$x^2 + y^2 - 4x + 2y = -1$
 $x^2 - 4x + 4 + y^2 + 2y + 1 = -1 + 4 + 1$
 $(x-2)^2 + (y+1)^2 = 4$
 Center (2, -1) $r = 2$

16. $\frac{7x^2}{7} + \frac{7y^2}{7} - 28y + 14 = 0$

$x^2 + y^2 - 4y + 2 = 0$
 $x^2 + y^2 - 4y + 4 = -2 + 4$
 $x^2 + (y-2)^2 = 2$
 Center (0, 2) $r = \sqrt{2}$

17. $\frac{3x^2}{3} + \frac{3y^2}{3} + 18x + 6y = 0$

$x^2 + y^2 + 6x + 2y = 0$
 $x^2 + 6x + 9 + y^2 + 2y + 1 = 0 + 9 + 1$
 $(x+3)^2 + (y+1)^2 = 10$
 Center (-3, -1) $r = \sqrt{10}$