Accelerated Geometry
Equations of Circles Practice

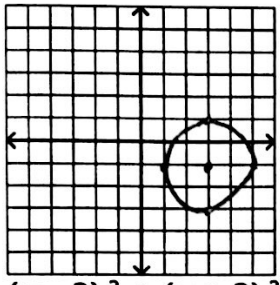
Name Key
Date _____

Use simplest radical form where appropriate (no decimals!)

1. Find the center and radius of each circle, then graph the circle.

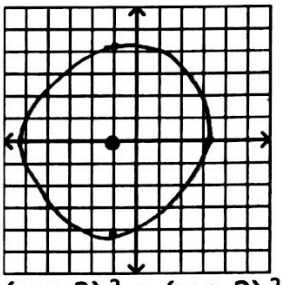
a. $(x-3)^2 + (y+1)^2 = 4$

center: $(3,-1)$ radius: 2



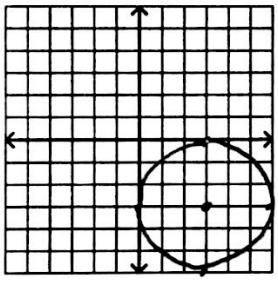
b. $(x+1)^2 + y^2 = 18$

center: $(-1,0)$ radius: $\sqrt{18} = 3\sqrt{2}$



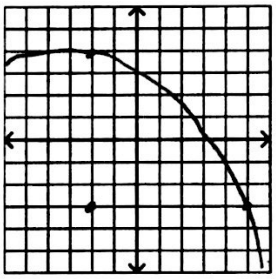
c. $(x-3)^2 + (y+3)^2 = 9$

center: $(3,-3)$ radius: 3



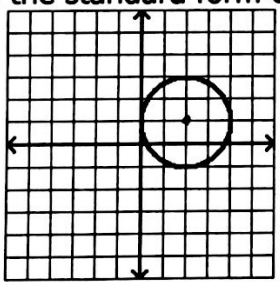
d. $(x+2)^2 + (y+3)^2 = 49$

center: $(-2,-3)$ radius: 7



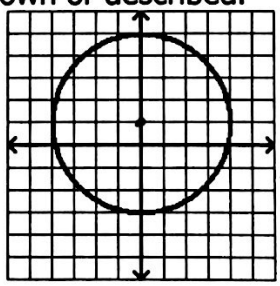
2. Write the standard form equation of the circle shown or described.

a.



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

b.



$x^2 + (y-1)^2 = 16$

c. center: (0, -7) radius: $2\sqrt{5}$

$x^2 + (y+7)^2 = 20$

d. center: (0, 0) radius: 2.5

$x^2 + y^2 = 6.25$

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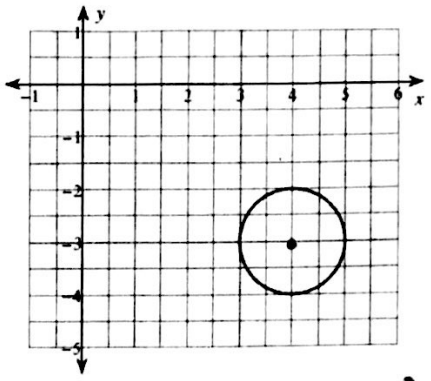
e. center: (-3, -3) radius: 6

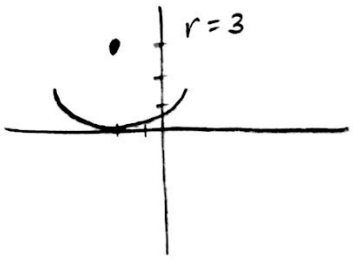
$(x+3)^2 + (y+3)^2 = 36$

f.



$(x-4)^2 + (y+3)^2 = 4$

g. A circle that is tangent to the *x*-axis that has its center at (-2, 3).



$(x+2)^2 + (y-3)^2 = 9$

h. A circle's center is at (4, 2), and the point (1, 6) is on the circle.

$r = \sqrt{(4-1)^2 + (2-6)^2}$

$= \sqrt{9+16} = \sqrt{25} = 5$

$(x-4)^2 + (y-2)^2 = 25$

i. A circle has a diameter with endpoints (4, 3) and (10, -7)

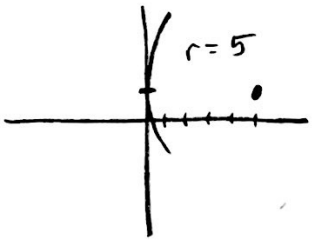
center $= \left(\frac{4+10}{2}, \frac{3-7}{2}\right) = (7, 2)$

$r = \sqrt{(10-7)^2 + (-7-2)^2}$

$= \sqrt{9+81} = \sqrt{90} = 3\sqrt{10}$

$(x-7)^2 + (y-2)^2 = 90$

j. A circle that is tangent to the y-axis that has its center at (5, 1)



$(x-5)^2 + (y-1)^2 = 25$

3. Consider the circle described by this equation: $(x-5)^2 + (y+1)^2 = 52$

a. Does the point (-1, 3) lie inside, outside, or on the circle? Justify your answer with calculations.

$(-1-5)^2 + (3+1)^2 \stackrel{?}{=} 52$

$36 + 16 \stackrel{?}{=} 52$

$52 = 52$

on

b. Does the point (-2, 1) lie inside, outside, or on the circle? Justify your answer with calculations.

$(-2-5)^2 + (1+1)^2 \stackrel{?}{=} 52$

$49 + 4 \stackrel{?}{=} 52$

$53 > 52$

Outside

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