Geometry

Chapter 12

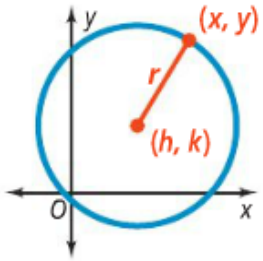
Section 12-5

take note

Theorem 12-16 Equation of a Circle

An equation of a circle with center (h, k) and radius r is $(x - h)^2 + (y - k)^2 = r^2$.

Standard Form



Write the standard equation for each circle with the given center and radius.

Center: (4, 8)

Radius: 3

$(x-4)^2+(y-8)^2=9$

Center: (0, -3)

Radius: $\sqrt{5}$ $(\sqrt{5})^2=5$

$x^2+(y+3)^2=5$

Write the standard equation for each circle with the given center and passing through the given point.

Center: (6, 9)

Point: (-2, 3)

$(-2-6)^2+(3-9)^2=r^2$

$-8 \quad -6$

$64+36=r^2$

$100=r^2$

$10=r$

$r=\sqrt{(-2-6)^2+(3-9)^2}$

$-8 \quad -6$

$\sqrt{64+36}$

$\sqrt{100}$

$r=10$

$(x-6)^2+(y-9)^2=100$

Center: (3, -5)

Point: (1, -5)

$(1-3)^2+(0)^2=r^2$

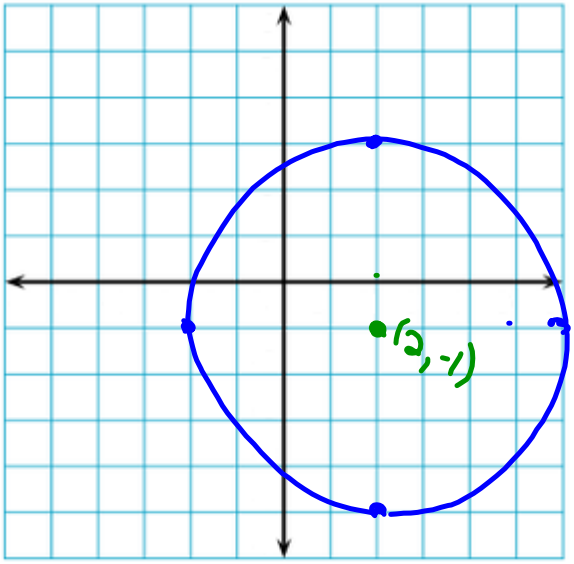
$4=r^2$

$r=2$

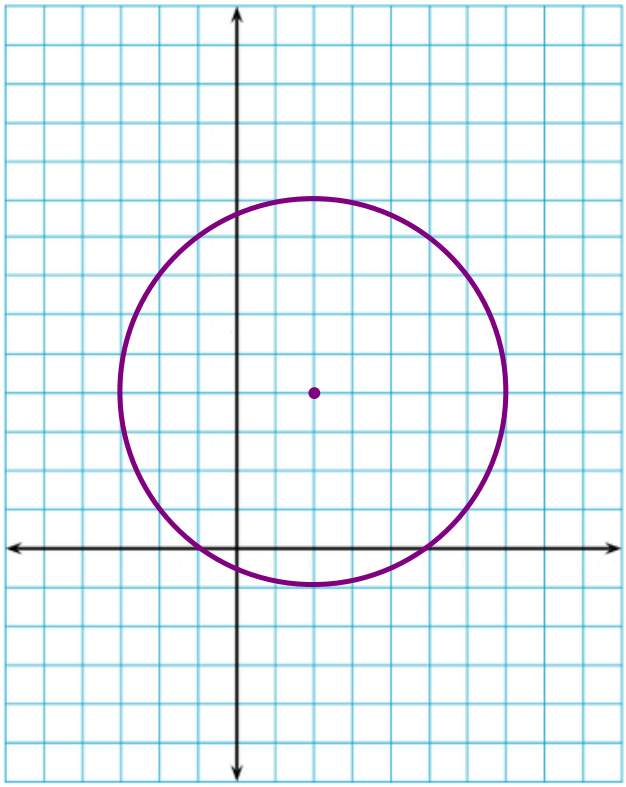
$(x-3)^2+(y+5)^2=4$

Graph the circle with the given equation:

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



Find the equation of the circle with the given graph:



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

Homework

Pages 801 - 802

12 - 45 by 3's