

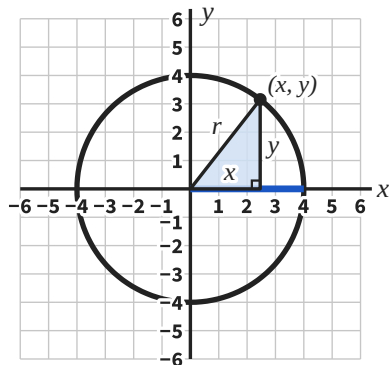
Equation of a Circle

ANSWERS

1

$$x^2 + y^2 = \text{radius}^2$$

Write the equation of the circle.

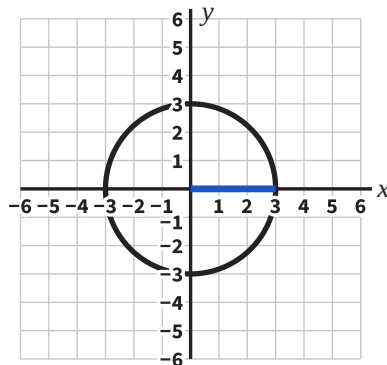


Radius Radius²

$$x^2 + y^2 = 16$$

2

Write the equation of the circle.

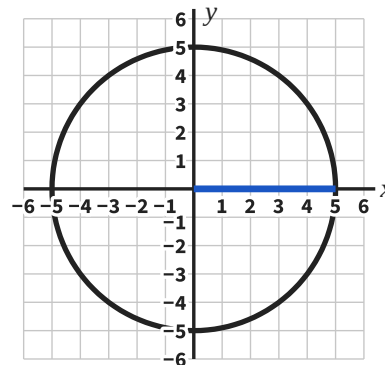


Radius Radius²

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

3

Write the equation of the circle.

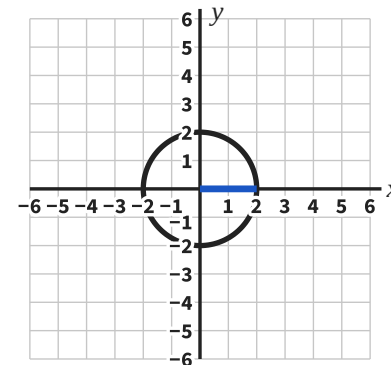


Radius Radius²

$$x^2 + y^2 = 25$$

4

Write the equation of the circle.



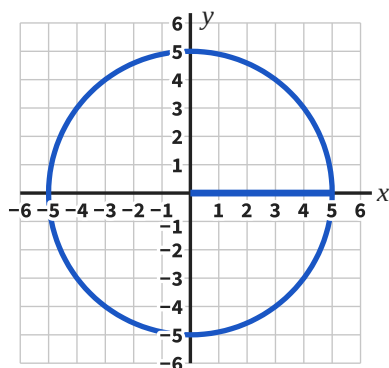
Radius Radius²

$$x^2 + y^2 = 4$$

5

Notice the change!

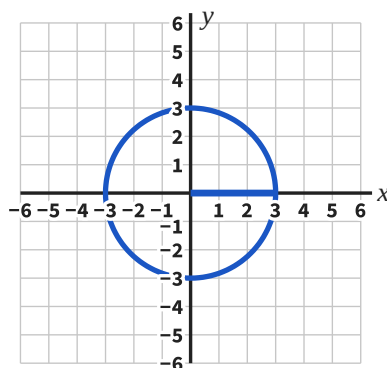
Draw the circle $x^2 + y^2 = 25$.



Radius

6

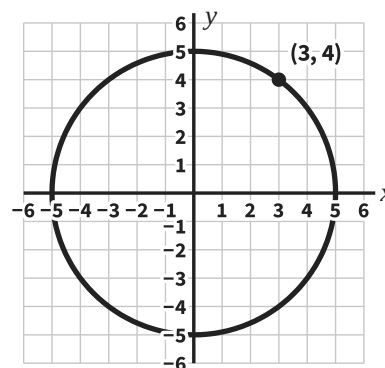
Draw the circle $x^2 + y^2 = 9$.



Radius

7

Is (3, 4) on the circle $x^2 + y^2 = 25$?

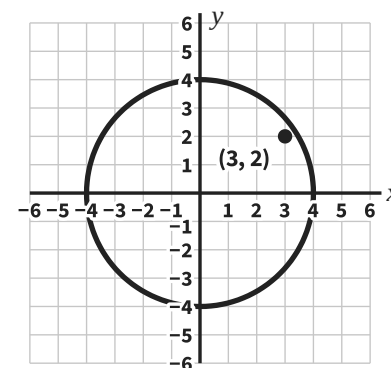


$$3^2 + 4^2 = 9 + 16 = 25$$

inside ☒ on ☐ outside

8

Is (3, 2) on the circle $x^2 + y^2 = 16$?



$$3^2 + 2^2 = 9 + 4 = 13$$

☒ inside ☐ on ☐ outside

Equation of a Circle *further practice*

ANSWERS

9



Is the point $(-5, 2)$ inside, on or outside the circle $x^2 + y^2 = 30$? Show how you know.

$$(-5)^2 + 2^2 = 25 + 4 = 29, \text{ less than } 30$$

Answer inside

10



A circle has its centre at the origin and passes through the point $(-6, 8)$. Write the equation of the circle.

$$(-6)^2 + 8^2 = 36 + 64 = 100$$

Answer $x^2 + y^2 = 100$

11



Which of these points lie on the circle $x^2 + y^2 = 65$?
 $(1, 8)$ $(-4, 7)$ $(5, -6)$ $(-8, -1)$

$$1 + 64, 16 + 49, 25 + 36 = 61, 64 + 1$$

Answer $(1, 8), (-4, 7), (-8, -1)$

12



The edge of a circular fountain is $x^2 + y^2 = 169$, in metres, with its centre at the origin. A bench on the edge has x coordinate 5 and is above the x axis. Find its coordinates.

$$25 + y^2 = 169, \text{ so } y^2 = 144$$

Answer $(5, 12)$

13



A phone mast at the origin sends a signal that just reaches the point $(8, -6)$. Coordinates are in km. Is a village at $(-7, 7)$ in range? Show how you know.

$$8^2 + (-6)^2 = 64 + 36 = 100$$

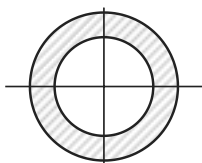
$$(-7)^2 + 7^2 = 98, \text{ less than } 100$$

Answer Yes

14



Find the shaded area between the circles $x^2 + y^2 = 20$ and $x^2 + y^2 = 45$. Give your answer in terms of π .



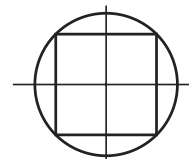
$$\pi r^2 = 45\pi \text{ and } 20\pi, \text{ so } 45\pi - 20\pi$$

Answer 25π

15



A square is drawn inside the circle $x^2 + y^2 = 50$ with its corners on the circle and its sides parallel to the axes. Find the area of the square.



$$\text{a corner is } (a, a): 2a^2 = 50, \text{ so } a = 5$$

$$\text{the side is } 10$$

Answer 100 square units

16



Leo says the circle $x^2 + y^2 = 72$ has twice the radius of the circle $x^2 + y^2 = 36$. Is he right? Explain.

$$\text{the radii are } 6 \text{ and } \sqrt{72} = 6\sqrt{2}$$

$$\text{twice } 6 \text{ is } 12: x^2 + y^2 = 144$$

Answer No