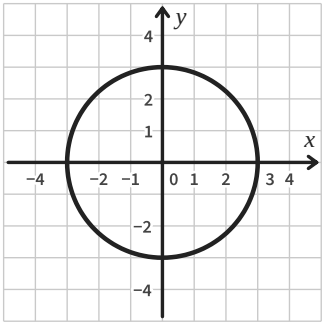
Equation of a circle

ANSWERS

1

Write the equation of the circle.



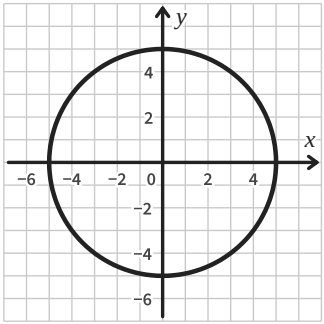
$r =$ 3

$r^2 =$ 9

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

2

Write the equation of the circle.



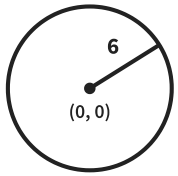
$r =$ 5

$r^2 =$ 25

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

3

A circle has centre (0, 0) and radius 6.
Write its equation.



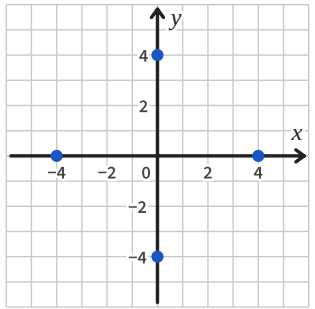
$r =$ 6

$r^2 =$ 36

Answer $x^2 + y^2 = 36$

4 *Notice the change!*

The circle $x^2 + y^2 = 16$.
Write down the radius. Mark where the circle crosses each axis.

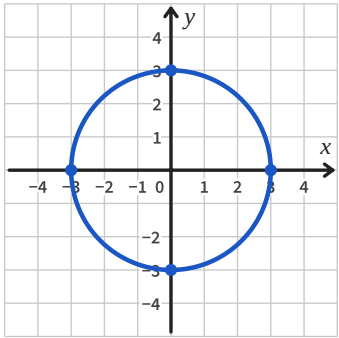


$r^2 =$ 16

$r =$ 4

5

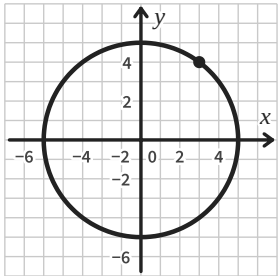
Draw the circle $x^2 + y^2 = 9$.



$r =$ 3

6 *Notice the change!*

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

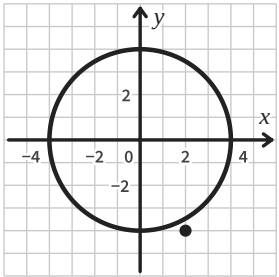


$3^2 + 4^2 =$ 9 + 16 = 25

Answer on

7

Is **(2, −4)** inside, on or outside the circle $x^2 + y^2 = 16$?

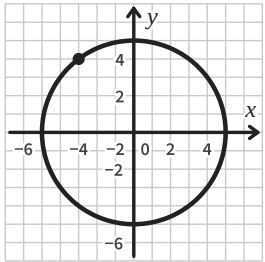


$2^2 + (-4)^2 = 4 + 16 = 20$

Answer outside

8

Mia says **(−3, 4)** is inside the circle $x^2 + y^2 = 25$ because −9 + 16 = 7.
Explain her mistake.



$(-3)^2 = 9$, not -9

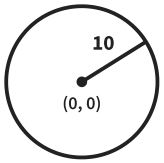
Answer 9 + 16 = 25: on

Equation of a circle *further practice*

ANSWERS

9

A circle has centre (0, 0) and radius 10. Write its equation.

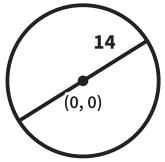


$r^2 = 10^2 = 100$

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

10

A circle has centre (0, 0) and diameter 14. Write its equation.



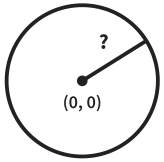
$r = 14 \div 2 = 7$

$r^2 = 49$

Answer $x^2 + y^2 = 49$

11

A phone mast at (0, 0) reaches every point inside the circle $x^2 + y^2 = 64$, in km. How far does it reach?

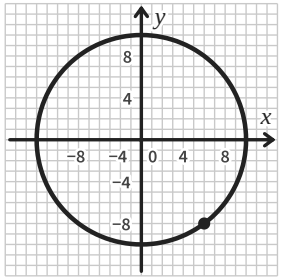


$r^2 = 64$, so $r = 8$

Answer 8 km

12

Is the point (6, −8) inside, on or outside the circle $x^2 + y^2 = 100$?

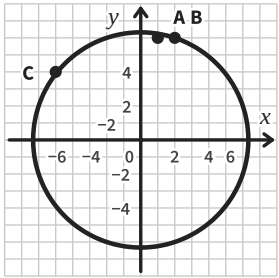


$6^2 + (-8)^2 = 36 + 64 = 100$

Answer on

13

Is each point A (1, 6), B (2, 6) and C (−5, 4) inside, on or outside the circle $x^2 + y^2 = 40$?



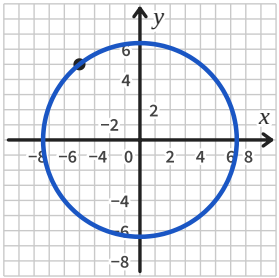
A: $1 + 36 = 37$, B: $4 + 36 = 40$

C: $25 + 16 = 41$

Answer A inside, B on, C outside

14

A circle has centre (0, 0) and goes through the point (−4, 5). Write its equation.

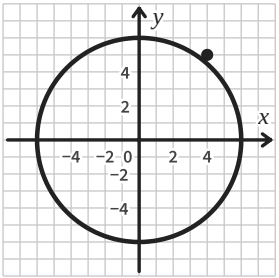


$(-4)^2 + 5^2 = 16 + 25 = 41$

Answer $x^2 + y^2 = 41$

15

A sprinkler at (0, 0) waters the circle $x^2 + y^2 = 36$, in metres. Is a plant at (4, 5) watered? Show how you know.



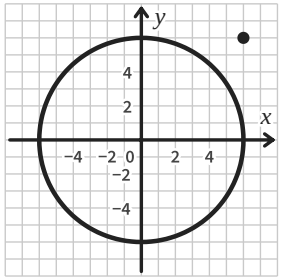
$4^2 + 5^2 = 16 + 25 = 41$

outside the circle

Answer No: $41 > 36$

16

Ben says (6, 6) is on the circle $x^2 + y^2 = 36$ because the radius is 6. Is he right? Explain.



$6^2 + 6^2 = 72$

$72 > 36$

Answer No: outside