

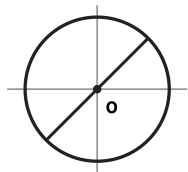
Equation of a Circle *stretch*

ANSWERS

1



A circle has its centre at the origin, O, and a diameter of 14 units. Write its equation.



$$\text{radius } 14 \div 2 = 7, \quad 7^2 = 49$$

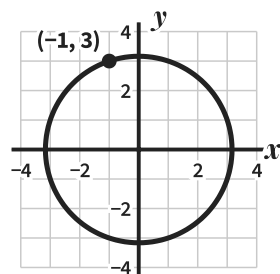
$$x^2 + y^2 = 49$$

Answer

2



The circle has its centre at the origin and passes through the point shown. Write its equation.



$$(-1)^2 + 3^2 = 1 + 9 = 10$$

$$x^2 + y^2 = 10$$

Answer

3



Mia says the circle $x^2 + y^2 = 50$ has a radius of 25. Explain her mistake. Give the radius in surd form.

she halved 50: the radius is $\sqrt{50}$

$$\sqrt{50} = \sqrt{25} \times \sqrt{2} = 5\sqrt{2}$$

$$\sqrt{50} = 5\sqrt{2}$$

Answer

4



Find the circumference of the circle $x^2 + y^2 = 12$. Give your answer in terms of π , in surd form.

$$\text{radius } \sqrt{12} = 2\sqrt{3}$$

$$2\pi \times 2\sqrt{3} = 4\sqrt{3}\pi$$

$$4\sqrt{3}\pi$$

Answer

5



The point $(k, 2k)$ lies on the circle $x^2 + y^2 = 45$. Find the possible values of k .

$$k^2 + 4k^2 = 45$$

$$5k^2 = 45, \quad k^2 = 9$$

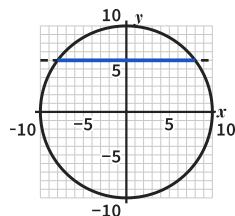
$$k = 3 \text{ or } k = -3$$

Answer

6



A round pond is $x^2 + y^2 = 100$, in metres. How long is the straight fence along $y = 6$, across the pond?



$$x^2 + 36 = 100, \quad x = \pm 8$$

$$8 - (-8) = 16$$

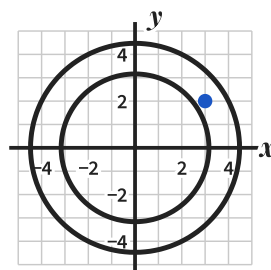
$$16 \text{ m}$$

Answer

7



Give a point with whole number coordinates between the circles $x^2 + y^2 = 10$ and $x^2 + y^2 = 20$.



$$9 + 4 = 13, \text{ between } 10 \text{ and } 20$$

$$(3, 2), \text{ for example}$$

Answer

8



The point (a, b) is on the circle $x^2 + y^2 = 29$. Explain why the point $(-b, a)$ is on the circle too.

$$a^2 + b^2 = 29$$

$$(-b)^2 = b^2, \text{ so } (-b)^2 + a^2 = a^2 + b^2$$

$$(-b)^2 + a^2 = 29$$

Reason