A56 (H)... Equation of a Circle

OCR

17 Describe fully the graph which has the equation $x^2 + y^2 = 9$.

AS6

.... **[2]**

17 Describe fully the graph which has the equation $x^2 + y^2 = 9$.

AS6

$x^2 + y^2 = r^2$

$\sqrt{9} = 3$

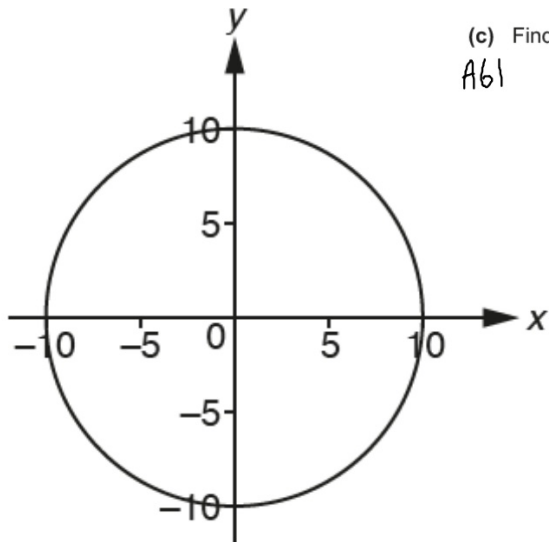$x^2 + y^2 = 3^2$

Circle, with radius 3 , centre $(0,0)$ [2]

17 The diagram shows a circle, centre the origin.

(b) Point P has coordinates (8, –6).
Show that point P lies on the circle.

(c) Find the equation of the tangent to the circle at point P.
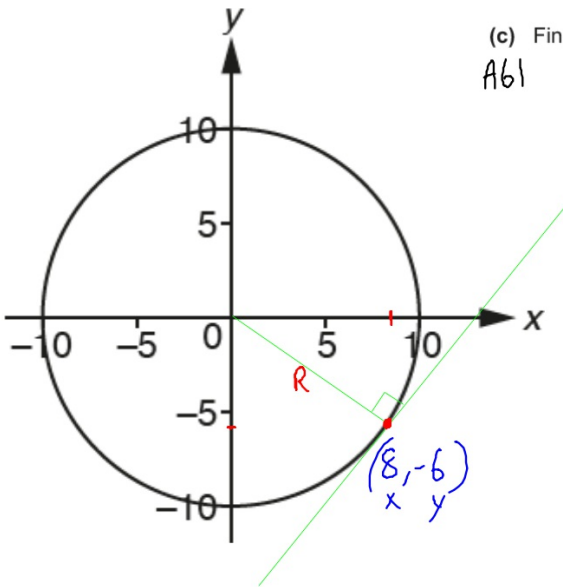
A61

(c) .... **[5]**

17 The diagram shows a circle, centre the origin.

(b) Point P has coordinates (8, –6).
Show that point P lies on the circle.

(c) Find the equation of the tangent to the circle at point P.

A61

Gradient of Radius $= -\frac{y}{h} = -\frac{6}{8}$

$= -\frac{3}{4}$

Gradient of tangent $= +\frac{4}{3}$

Tangent $y = \frac{4}{3}x$

$-6 = \frac{32}{3}x$

$-6 = 10\frac{2}{3} - 16\frac{2}{3}$

ans

$y = \frac{4}{3}x - 16\frac{2}{3}$ ✓

(c) .... **[5]**

EDEXCEL

16 (a) On the grid, draw the graph of $x^2 + y^2 = 12.25$

A56
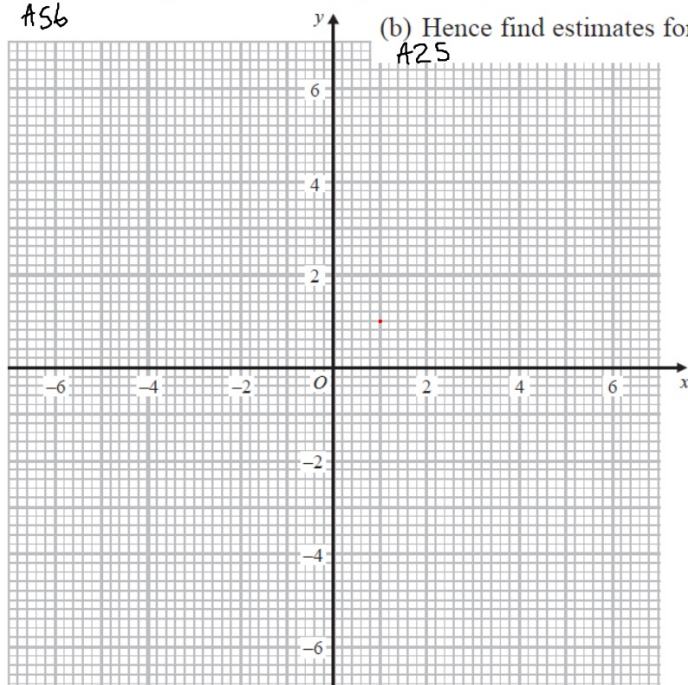
(b) Hence find estimates for the solutions of the simultaneous equations

A25

$$x^2 + y^2 = 12.25$$
$$2x + y = 1$$

(3)

16 (a) On the grid, draw the graph of $x^2 + y^2 = 12.25$ εr^2 $x^2 + y^2 = r^2 = $ circle

A56
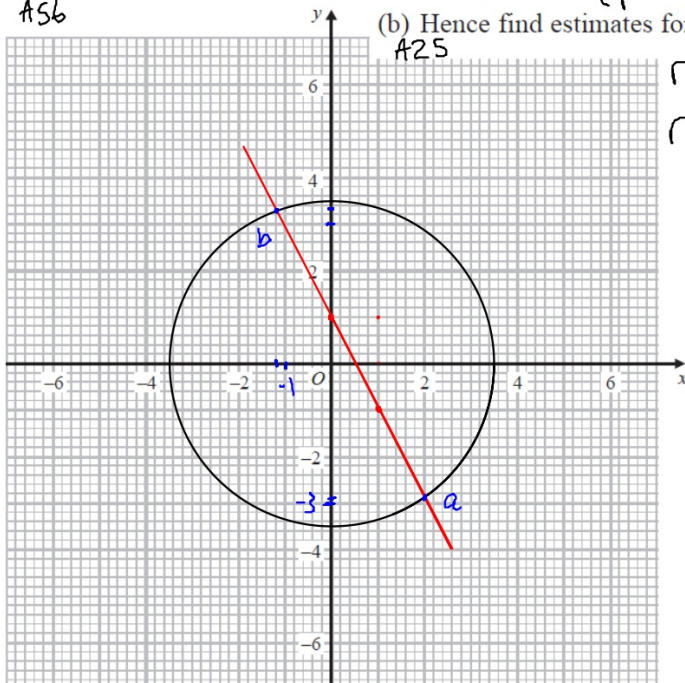
(b) Hence find estimates for the solutions of the simultaneous equations

A25

$r = \sqrt{12.25}$

$r = 3.5$

$x^2 + y^2 = 12.25$ circle
$2x + y = 1$ straight line

$y = mx + c$

$2x + y = 1$

$y = -2x + 1$

G   y-int

$a = (2, -2.9)$ ⟵ ms ✓

$b = (-1.2, 3.3)$ ms ✓

(3)

15 The equation of a circle is $x^2 + y^2 = 42.25$

Find the radius of the circle.

A56

....

(Total for Question 15 is 1 mark)

15 The equation of a circle is $x^2 + y^2 = 42.25$

Find the radius of the circle.

A56

$$x^2 + y^2 = r^2$$

$$x^2 + y^2 = 42.25$$

$$r = \sqrt{42.25}$$

$$= \quad 6.5 \checkmark$$

(Total for Question 15 is 1 mark)

AQA

20   Work out the diameter of the circle $x^2 + y^2 = 64$

AS6   Circle your answer.

[1 mark]

8   16   32   128

20 Work out the diameter of the circle $x^2 + y^2 = 64$
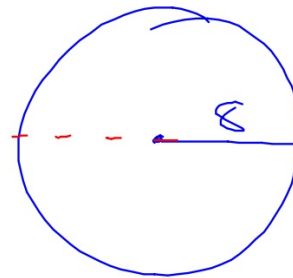
AS6 Circle your answer.

[1 mark]

8   (16)   32   128

$$x^2 + y^2 = r^2$$

$$x^2 + y^2 = 64$$

$$x^2 + y^2 = 8^2 \underline{\qquad} radius$$

28 A, B and C are points on the circle $x^2 + y^2 = 36$ as shown.
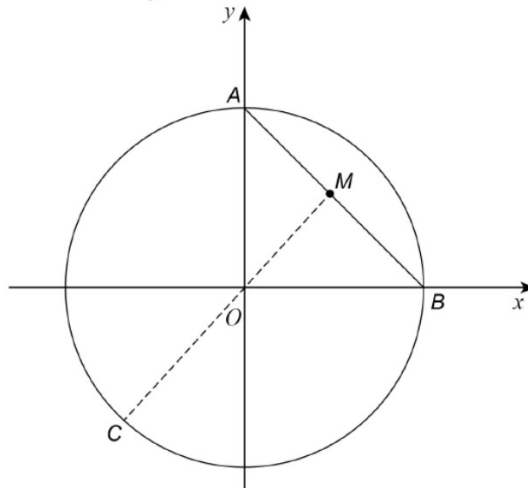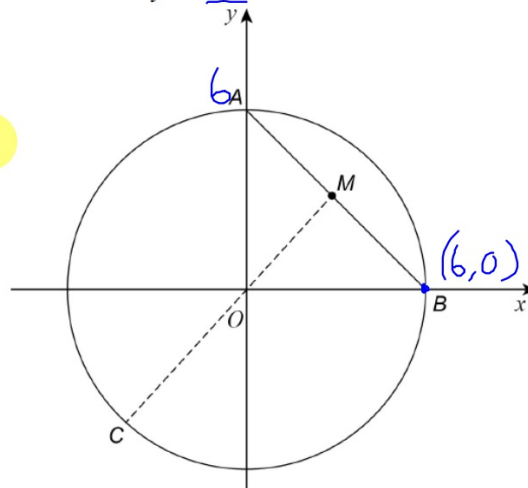
A56

A is on the y-axis.

B is on the x-axis.

M is the midpoint of AB.

COM is a straight line.

28 (a) Show that the coordinates of A are (0, 6) **[1 mark]**
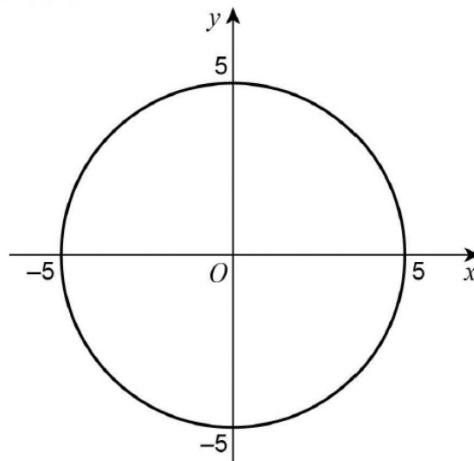
28 (b) Work out the coordinates of B.

[1 mark]

Answer (_____ , _____)

28 *A, B* and *C* are points on the circle $x^2 + y^2 = \underline{36}$ as shown.

A56

A is on the *y*-axis.

B is on the *x*-axis.

M is the midpoint of *AB*.

COM is a straight line.

28 (a) Show that the coordinates of *A* are (0, 6) **[1 mark]**

$$x^2 + y^2 = R^2$$
$$x^2 + y^2 = 6^2 \quad \cdots 36 \checkmark$$

28 (b) Work out the coordinates of *B*.

[1 mark]

Answer (__6__ , __0__)

22 A circle, centre O, passes through (5, 0).

A56

What is the equation of the circle?
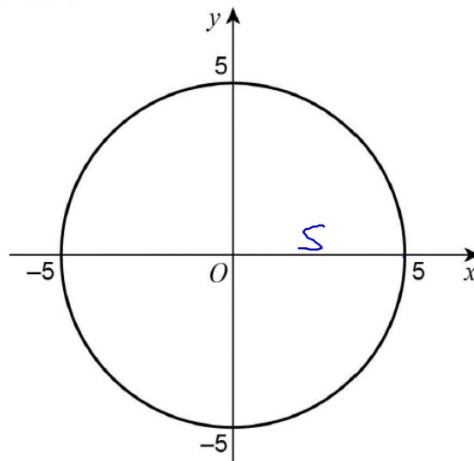
Circle your answer.

[1 mark]

$x^2 + y^2 = 25$ $\qquad$ $x^2 + y^2 = 5$ $\qquad$ $x^2 + y^2 = 10$ $\qquad$ $x^2 + y^2 = 100$

22   A circle, centre O, passes through (5, 0).

A56

$x^2 + y^2 = r^2$

$x^2 + y^2 = 5^2$

$x^2 + y^2 = 25$

What is the equation of the circle?

Circle your answer.

[1 mark]

$x^2 + y^2 = 25$ $x^2 + y^2 = 5$ $x^2 + y^2 = 10$ $x^2 + y^2 = 100$