1 P (2, 4) is a point on a circle, centre O.

Not drawn accurately

Work out the equation of the tangent to the circle at P.
Give your answer in the form $y = mx + c$

[4 marks]

Answer _____

$\frac{}{4}$

2 P (9, 3) is a point on a circle, centre O.
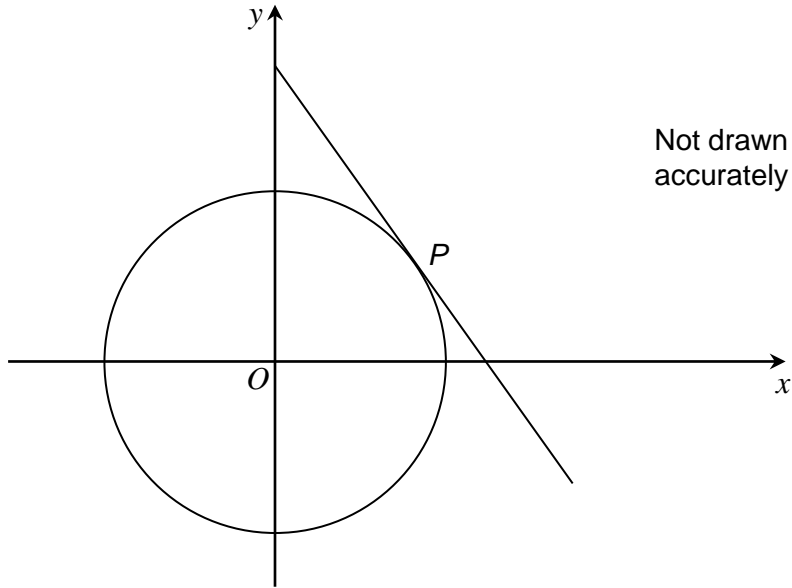
Not drawn
accurately

Work out the equation of the tangent to the circle at P.
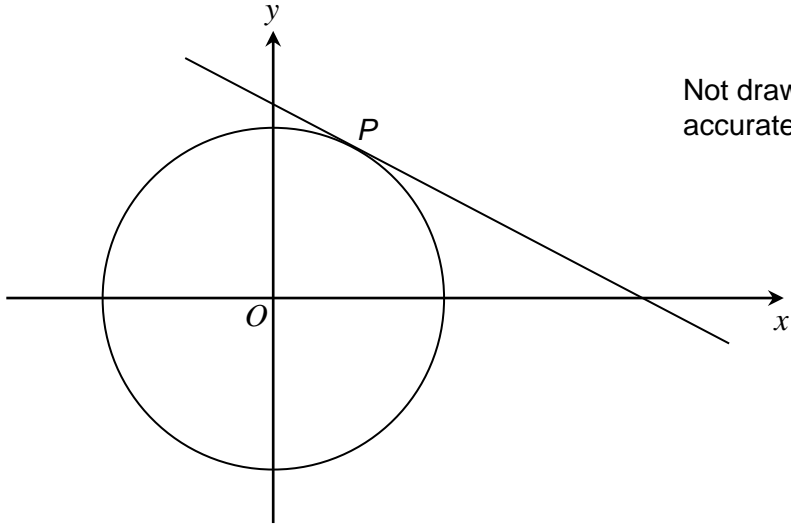Give your answer in the form $y = mx + c$

[4 marks]

Answer _____

3 P (2, 5) is a point on a circle, centre O.

Not drawn
accurately

Work out the equation of the tangent to the circle at P.
Give your answer in the form $y = mx + c$ **[4 marks]**

Answer _____

8

Turn over ▶

4 *P* (1, -4) is a point on a circle, centre *O*.

Not drawn accurately

Work out the equation of the tangent to the circle at *P*.
Give your answer in the form $y = mx + c$

[4 marks]

Answer _____

5 P (-3, 5) is a point on a circle, centre O.

Not drawn
accurately

Work out the equation of the tangent to the circle at P.
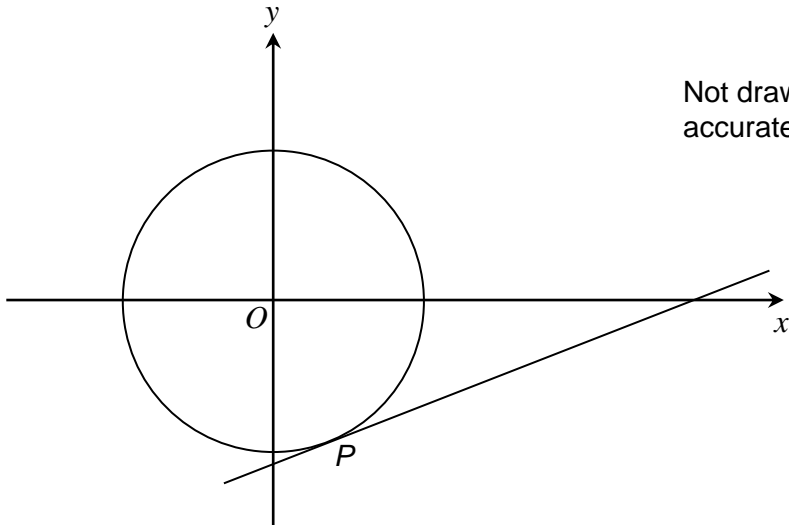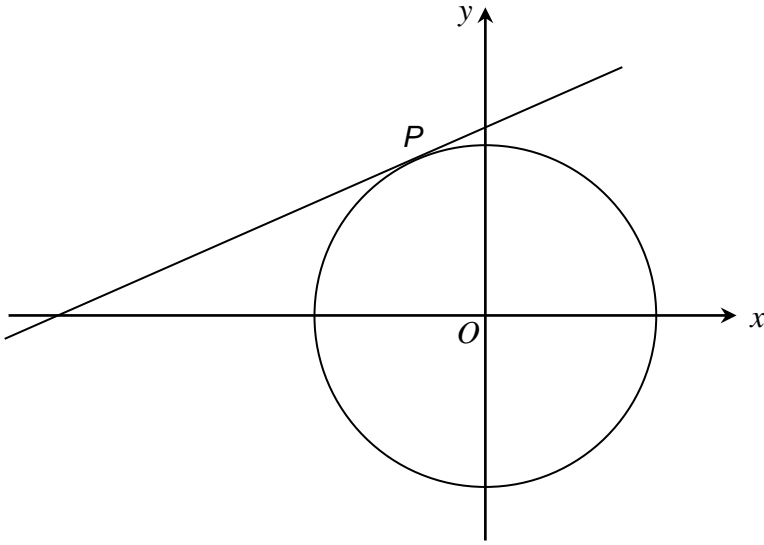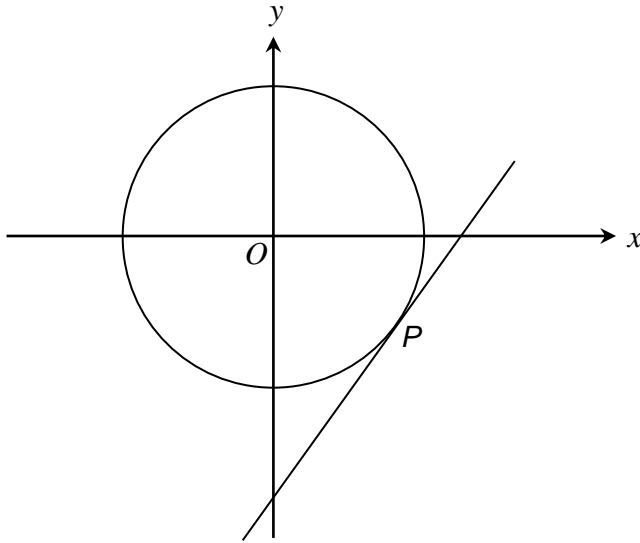Give your answer in the form $y = mx + c$ **[4 marks]**

Answer _____

6 P is a point on the circle with equation $x^2 + y^2 = 65$
P has coordinates $(7, k)$, where $k < 0$

Not drawn
accurately

Work out the equation of the tangent to the circle at P.
Give your answer in the form $y = mx + c$ **[5 marks]**

Answer _____

7 *P* is a point on the circle with equation $x^2 + y^2 = 117$
P has coordinates (9, k), where $k > 0$
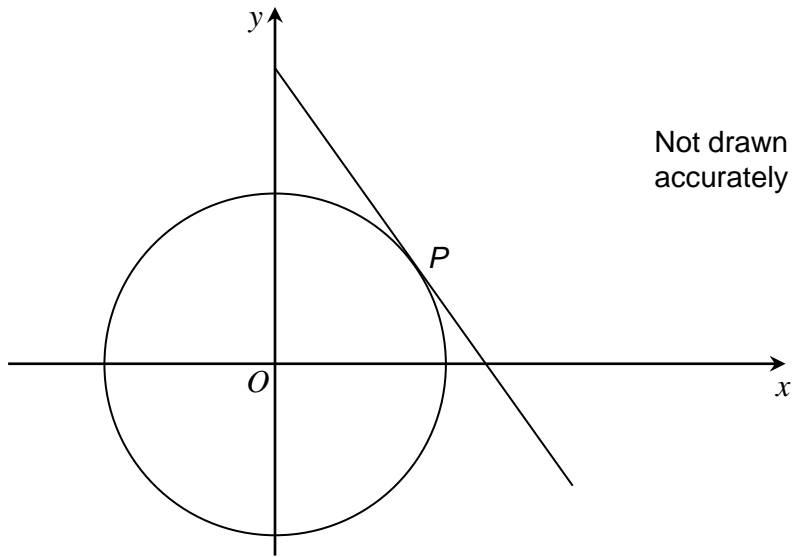
Not drawn
accurately

Work out the equation of the tangent to the circle at *P*.
Give your answer in the form $y = mx + c$ **[5 marks]**

Answer _____

8   *P* is a point on the circle with equation $x^2 + y^2 = 22.25$
   P has coordinates (–4, k), where $k < 0$
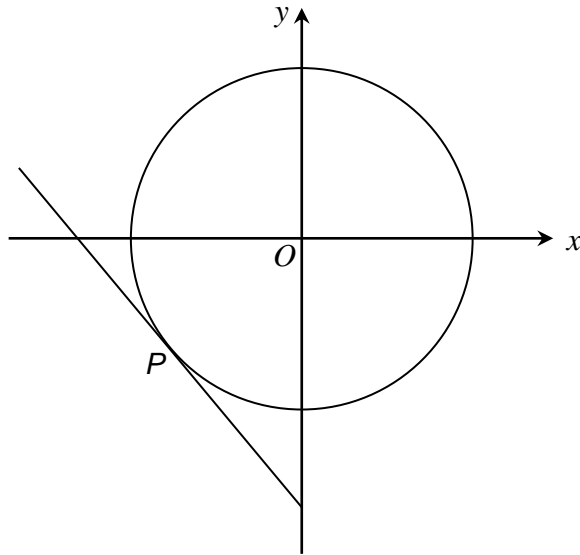
Not drawn
accurately

Work out the equation of the tangent to the circle at *P*.
Give your answer in the form $ay + bx + c = 0$ where a, b and c are integers.

[6 marks]

Answer _____

9 P (2, 3) is a point on a circle, centre O.
The tangent at P intersects the x-axis at Q

Not drawn
accurately
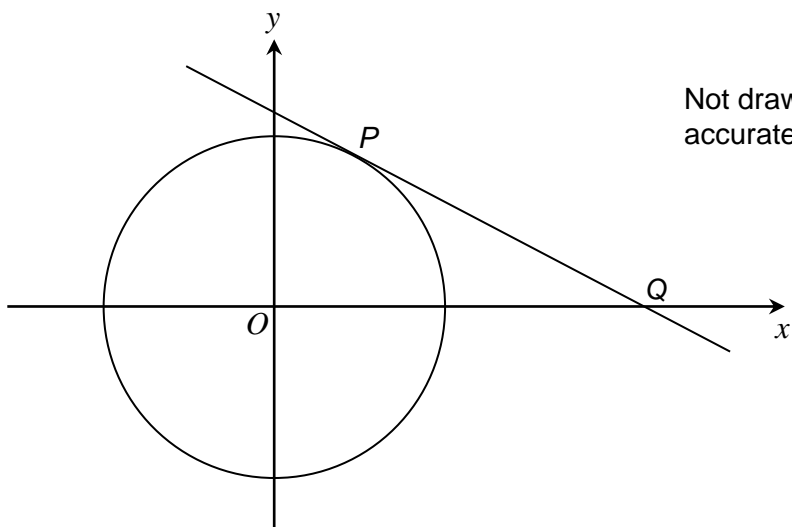
Work out the coordinates of the point Q.   **[5 marks]**
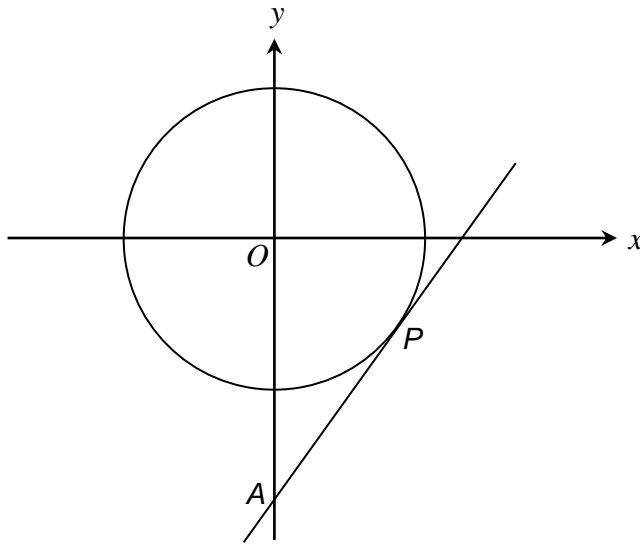
Answer (_____ , _____)

Turn over ▶

10 P (14, -4) is a point on a circle, centre O.
The tangent at P intersects the y-axis at A

Not drawn
accurately

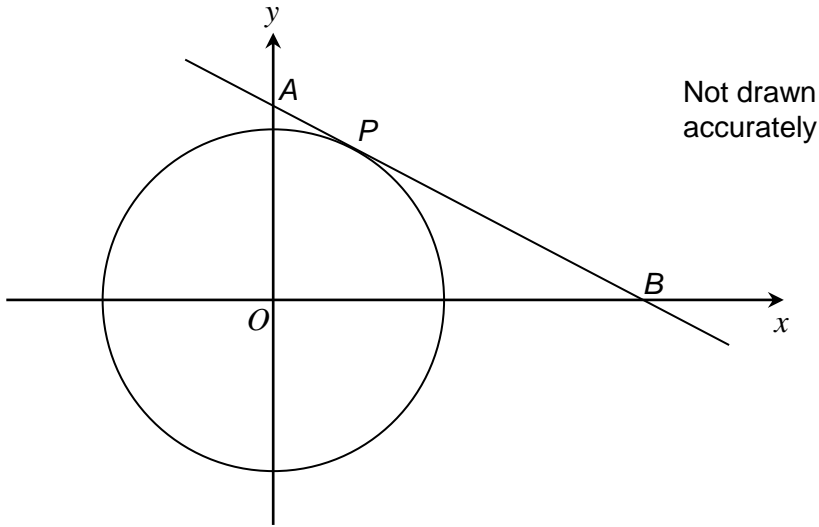Work out the coordinates of the point A.   **[5 marks]**

Answer (_____ , _____)

11 P (3, 9) is a point on a circle, centre O.
The tangent at P intersects the axes at points A and B.

Not drawn
accurately

Work out the area of triangle AOB. **[6 marks]**

Answer _____ units^2

Turn over ▶

12   *P* (-8, 16) is a point on a circle, centre *O*.
The tangent at *P* intersects the axes at points *A* and *B*.

Not drawn
accurately

Work out the length of *AB*.
Give your answer in the form $a\sqrt{5}$ where a is an integer.
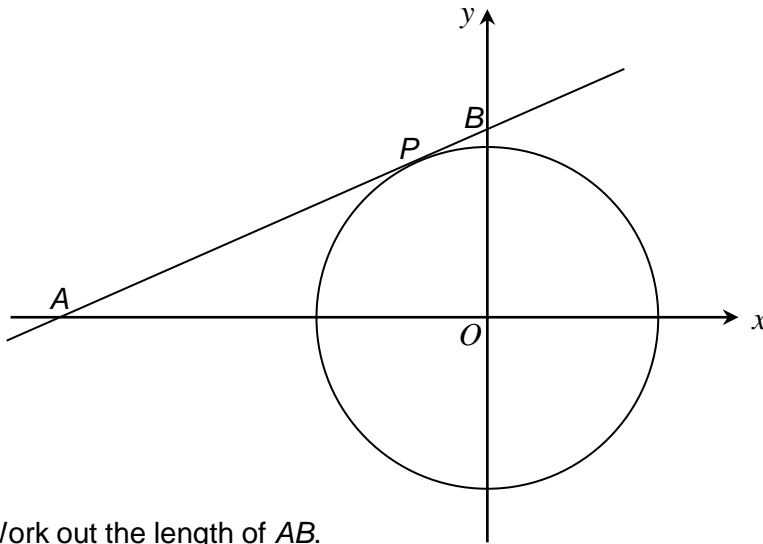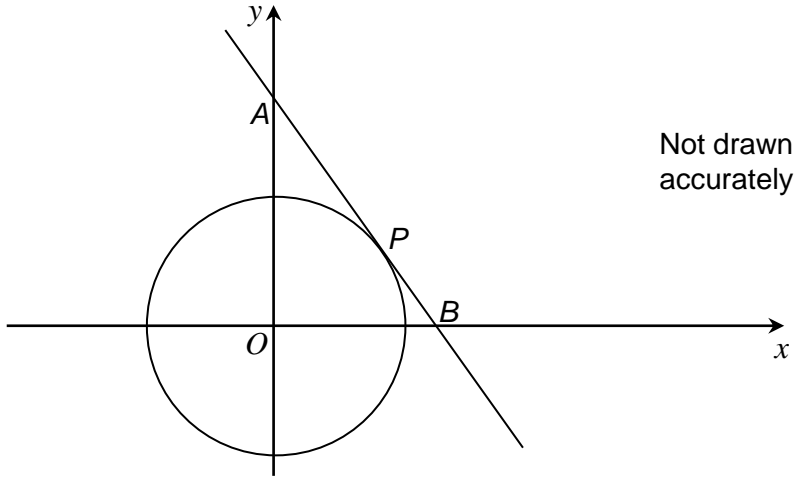
[6 marks]

Answer _____ units

13 P (5, 2) is a point on a circle, centre O.
The tangent at P intersects the axes at points A and B.

Not drawn
accurately

Work out the length of AB.
Give your answer to 4 significant figures.   **[6 marks]**

_____

_____

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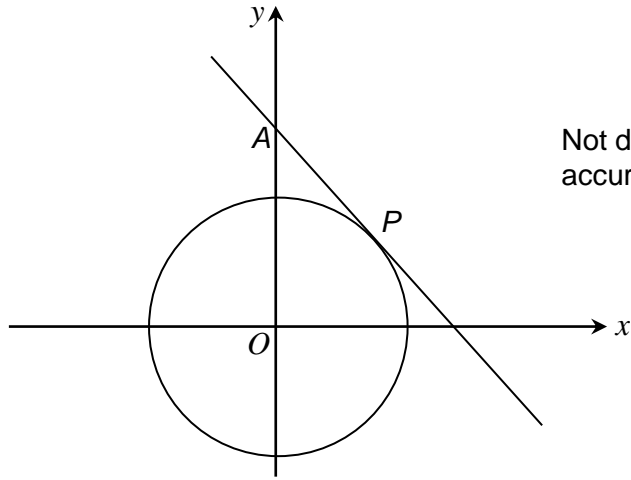Answer _____ units $\frac{}{12}$

Turn over ▶

14 $P(\sqrt{12}, 6)$ is a point on a circle, centre O.
The tangent at P intersects the y-axis at point A.

Not drawn
accurately

Show that the length of AP is an integer. **[6 marks]**

15 $P(\sqrt{5}, \sqrt{20})$ is a point on a circle, centre O.
The tangent at P intersects the x-axis at point A.

y

P

Not drawn
accurately

O

A

x

Work out the area of triangle AOP.   **[6 marks]**

Answer _____ units^2 $\overline{12}$