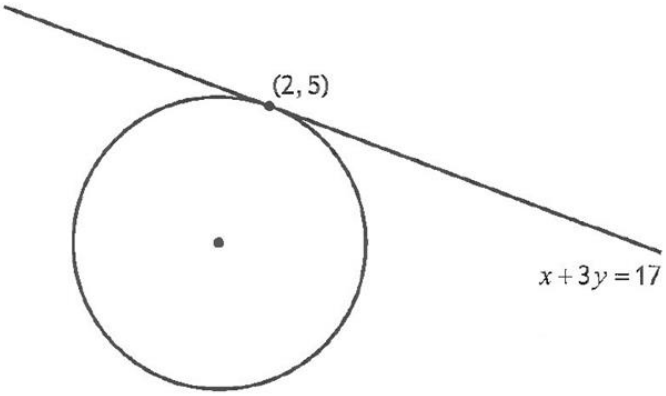
SQA Past paper questions

2023 – Paper 2 – Question 15

The line $x+3y=17$ is a tangent to a circle at the point $(2, 5)$.



The centre of the circle lies on the y-axis.

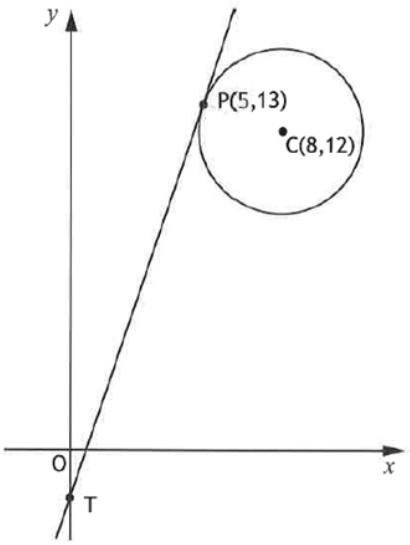
Find the coordinates of the centre of the circle. 4

Click here for video solution.

2019 – Paper 2 – Question 15

A circle has centre C(8,12).

The point P(5,13) lies on the circle as shown.



(a) Find the equation of the tangent at P. 3

The tangent from P meets the y-axis at the point T.

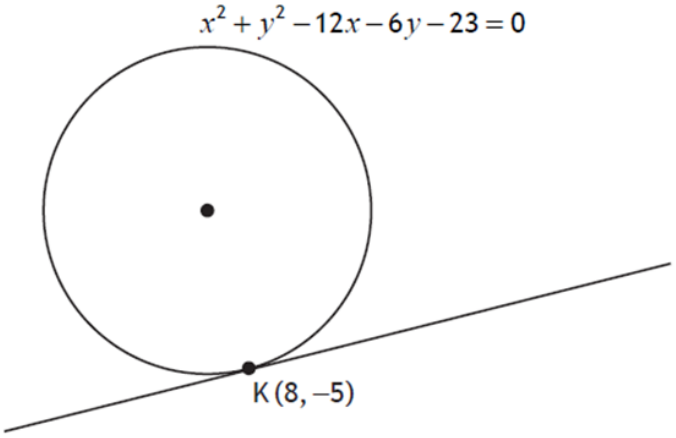
(b) (i) State the coordinates of T. 1

(ii) Find the equation of the circle that passes through the points C, P and T. 3

Click here for video solution.

2018 – Paper 1 – Question 4

The point K (8, –5) lies on the circle with equation $x^2 + y^2 - 12x - 6y - 23 = 0$.



Find the equation of the tangent to the circle at K. 4

Click here for video solution.

2017 – Paper 1 – Question 2

The point P (–2, 1) lies on the circle $x^2 + y^2 - 8x - 6y - 15 = 0$.

Find the equation of the tangent to the circle at P. 4

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2015 – Paper 1 – Question 11

T(–2, –5) lies on the circumference of the circle with equation

$$(x + 8)^2 + (y + 2)^2 = 45.$$

(a) Find the equation of the tangent to the circle passing through T. 4

(b) This tangent is also a tangent to a parabola with equation $y = -2x^2 + px + 1 - p$, where $p > 3$.

Determine the value of p. 6

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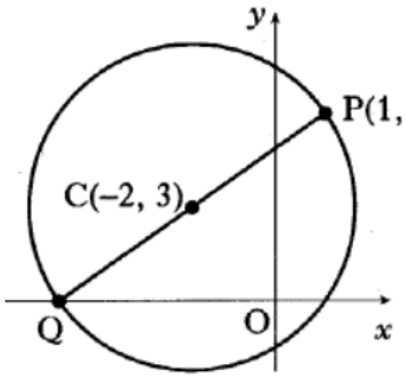
2006 – Paper 1 – Question 2

A circle has centre C(–2, 3) and passes through P(1, 6).

(*a*) Find the equation of the circle. 2

(*b*) PQ is a diameter of the circle. Find the equation of the tangent to this circle at Q. 4



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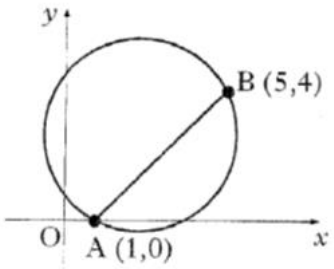
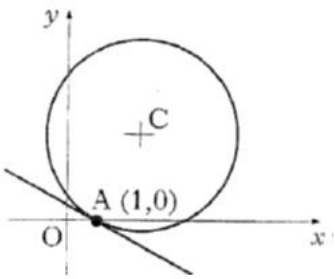
2005 – Paper 2 – Question 2

(*a*) A chord joins the points A(1,0) and B(5,4) on the circle as shown in the diagram.
Show that the equation of the perpendicular bisector of chord AB is $x + y = 5$. 4



(*b*) The point C is the centre of this circle. The tangent at the point A on the circle has equation $x + 3y = 1$.
Find the equation of the radius CA. 4



(*c*) (i) Determine the coordinates of the point C.
(ii) Find the equation of the circle. 4

Click here for video solution.

2002 – Paper 1 – Question 1

The point P(2, 3) lies on the circle $(x + 1)^2 + (y - 1)^2 = 13$. Find the equation of the tangent at P. 4

Click here for video solution.

2000 – Paper 2 – Question 2

(*a*) Find the equation of AB, the perpendicular bisector of the line joining the points P(–3, 1) and Q(1, 9). 4

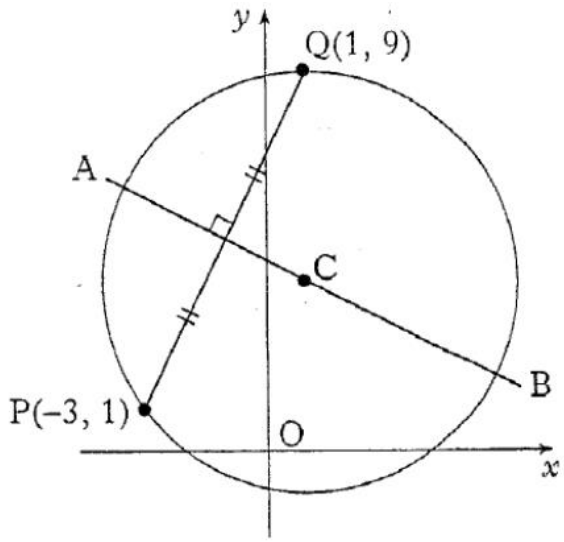
(*b*) C is the centre of a circle passing through P and Q. Given that QC is parallel to the *y*-axis, determine the equation of the circle. 3

(*c*) The tangents at P and Q intersect at T.

Write down

(i) the equation of the tangent at Q

(ii) the coordinates of T. 2



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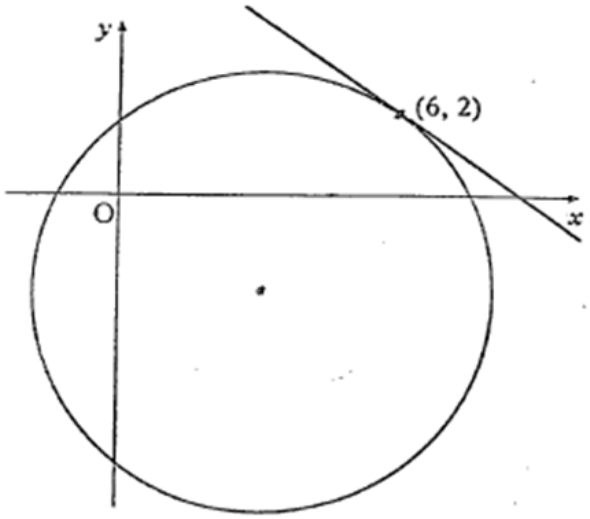
1998 – Paper 1 – Question 4

The circle shown has equation $(x-3)^2+(y+2)^2=25$.

Find the equation of the tangent at the point (6, 2). (4)



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1996 – Paper 1 – Question 20

The line $y=-1$ is a tangent to a circle which passes through (0, 0) and (6, 0).
Find the equation of this circle. (6)

Click here for video solution.

1996 – Paper 1 – Question 4

Find the equation of the tangent at the point (3, 4) on the circle

$$x^2 + y^2 + 2x - 4y - 15 = 0$$ **4**

Click here for video solution.

1991 – Paper 1 – Question 8

Find the equation of the tangent at the point (3, 1) on the circle

$$x^2 + y^2 - 4x + 6y - 4 = 0$$ **5**

Click here for video solution.

1988 – Paper 1 – Question 2

Find the equation of the tangent at the point (3, 1) on the circle

$$x^2 + y^2 - 3x + y - 16 = 0$$ **4**

Click here for video solution.