Name:

Level 2 Further Maths

Equation of a Tangent to a Circle

Corbettmaths

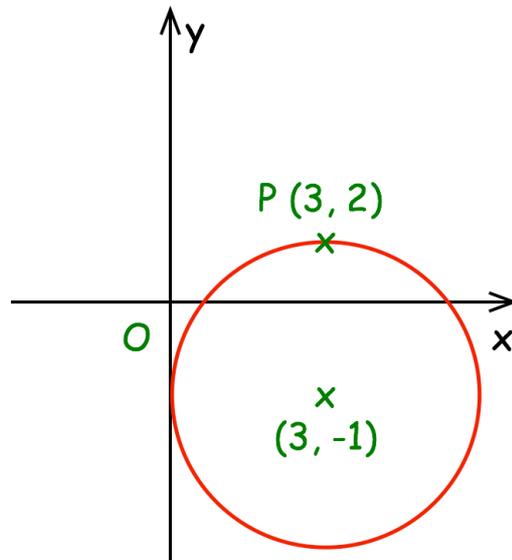Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. The diagram shows the circle with equation $(x-3)^2 + (y+1)^2 = 9$

The point P has coordinates (3, 2)

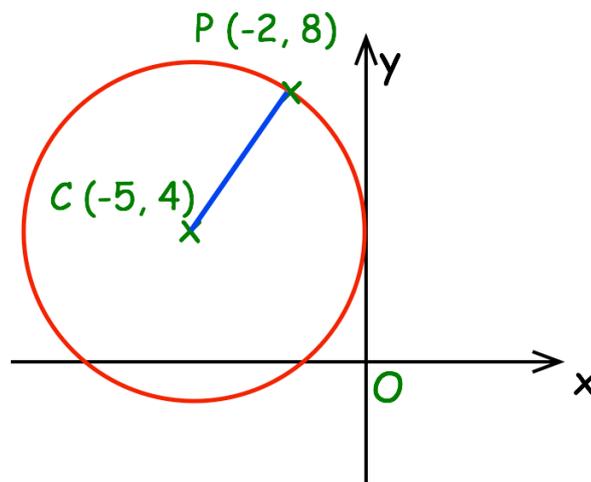(a) Write down the equation of the tangent to the circle at the point P

....

(1)

The equation of the tangent to the circle at the point Q is $x = 6$

(b) Write down the coordinates of the point Q

....

(1)

2. The diagram shows the circle, centre C, with equation $(x + 5)^2 + (y - 4)^2 = 25$ with a tangent at the point $(-2, 8)$
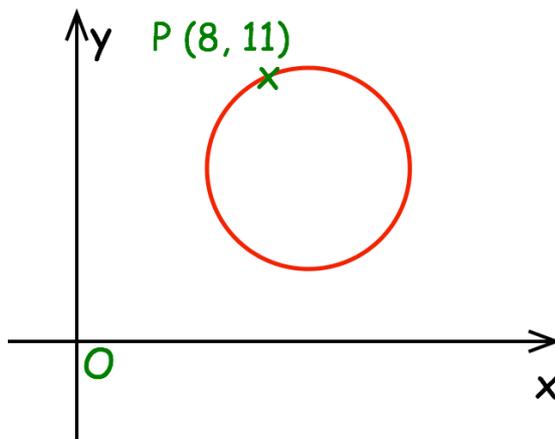

(a) Find the gradient of the line CP

....

(1)

(b) Find the gradient of the tangent

....

(1)

(c) Find the equation of the tangent

....

(2)

3. The diagram shows the circle with equation $(x - 9)^2 + (y - 8)^2 = 10$
    with a tangent at the point (8, 11)

P (8, 11)

    Find the equation of the tangent to the circle at P

    ....

    (5)

4. The line l is a tangent to the circle $(x + 2)^2 + (y + 1)^2 = 20$ at the point P. P is the point $(-6, 1)$
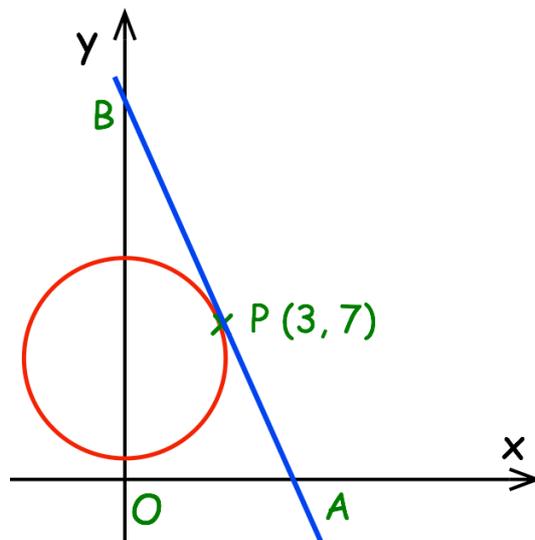
Work out the equation of the line l

....

(5)

5. The line l is a tangent to the circle $(x - 5)^2 + (y + 12)^2 = 61$ at the point P. P is the point $(10, -6)$

Work out the equation of the line l

....

(5)

6. Shown below is the circle with equation $x^2 + (y - 6)^2 = 10$

The line AB is a tangent to the circle at the point P (3, 7)

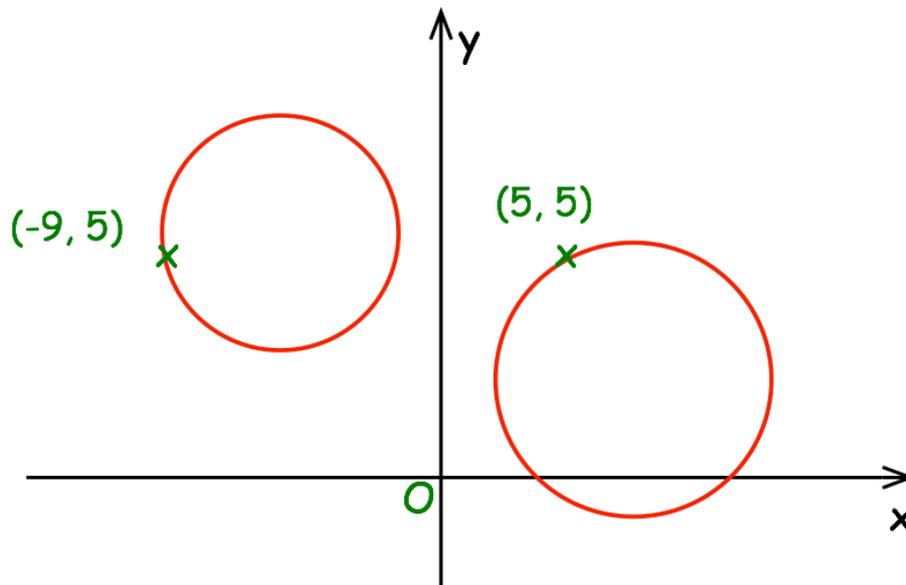Find the area of triangle OAB.

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(6)

7. Shown below are two circles.

Circle 1 has equation $(x + 6)^2 + (y - 6)^2 = 10$

Circle 2 has equation $(x - 7)^2 + (y - 2)^2 = 13$

The line l_1 is a tangent to Circle 1 at the point $(-9, 5)$
The line l_2 is a tangent to Circle 2 at the point $(5, 5)$

The lines l_1 and l_2 intersect at the point A.

Find the coordinates of the point A.

....

(8)