# Circle As level Edexcel Maths Past Papers Questions

**01.**

A circle $C$ with centre at $(-2, 6)$ passes through the point $(10, 11)$.

**[a]** Show that the circle $C$ also passes through the point $(10, 1)$.

(3)

The tangent to the circle $C$ at the point $(10, 11)$ meets the $y$ axis at the point $P$ and the tangent to the circle $C$ at the point $(10, 1)$ meets the $y$ axis at the point $Q$.

(b) Show that the distance $PQ$ is 58 explaining your method clearly.

(7)

**02.**

. The circle $C$ has equation

$$x^2 + y^2 - 6x + 10y + 9 = 0$$

(a) Find

(i) the coordinates of the centre of $C$

(ii) the radius of $C$

(3)

The line with equation $y = kx$, where $k$ is a constant, cuts $C$ at two distinct points.

(b) Find the range of values for $k$.

(6)

**03.**

. A circle $C$ has equation

$$x^2 + y^2 - 4x + 8y - 8 = 0$$

(a) Find

(i) the coordinates of the centre of $C$,

(ii) the exact radius of $C$.

**(3)**

The straight line with equation $x = k$, where $k$ is a constant, is a tangent to $C$.

(b) Find the possible values for $k$.

**(2)**

**04.** (i) A circle $C_1$ has equation

$$x^2 + y^2 + 18x - 2y + 30 = 0$$

The line $l$ is the tangent to $C_1$ at the point $P(-5, 7)$.

Find an equation of $l$ in the form $ax + by + c = 0$, where $a$, $b$ and $c$ are integers to be found.

**(5)**

(ii) A different circle $C_2$ has equation

$$x^2 + y^2 - 8x + 12y + k = 0$$

where $k$ is a constant.

Given that $C_2$ lies entirely in the 4th quadrant, find the range of possible values for $k$.

**(4)**

**05.**

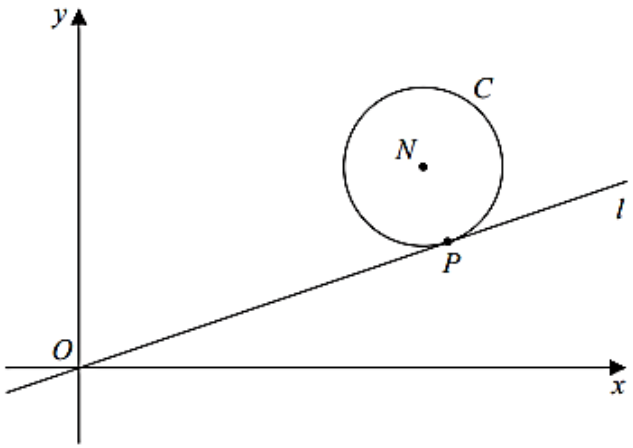


**Figure 4**

Figure 4 shows a sketch of a circle $C$ with centre $N(7, 4)$

The line $l$ with equation $y = \frac{1}{3}x$ is a tangent to $C$ at the point $P$.

Find

(a) the equation of line $PN$ in the form $y = mx + c$, where $m$ and $c$ are constants,

**(2)**

(b) an equation for $C$.

**(4)**

The line with equation $y = \frac{1}{3}x + k$, where $k$ is a non-zero constant, is also a tangent to $C$.

(c) Find the value of $k$.

**(3)**

**06.**

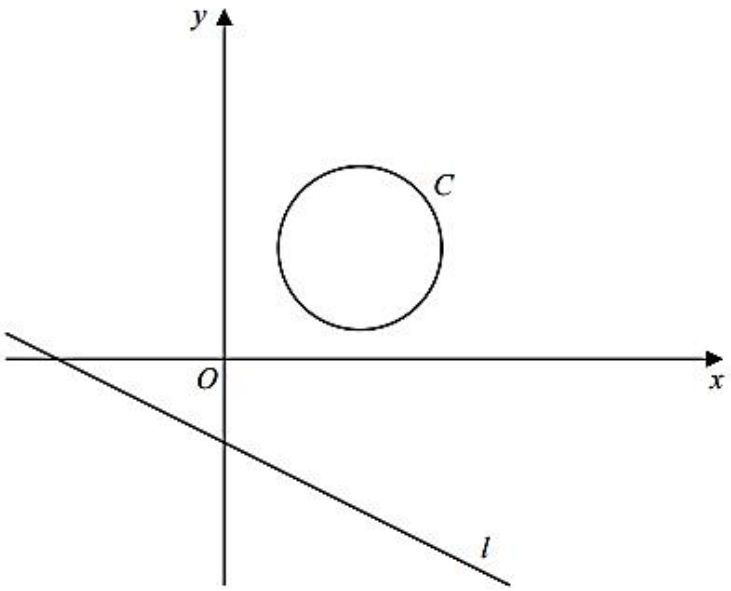


**Figure 3**

Figure 3 shows the circle $C$ with equation

$$x^2 + y^2 - 10x - 8y + 32 = 0$$

and the line $l$ with equation

$$2y + x + 6 = 0$$

(a) Find

(i) the coordinates of the centre of $C$,

(ii) the radius of $C$.

**(3)**

(b) Find the shortest distance between $C$ and $l$.

**(5)**

**07.**

The circle $C$ has equation

$$x^2 + y^2 - 6x + 10y + k = 0$$

where $k$ is a constant.

(a) Find the coordinates of the centre of $C$.

**(2)**

Given that $C$ does not cut or touch the $x$-axis,

(b) find the range of possible values for $k$.

**(3)**