

Phone: +442081445350

www.chemistryonlinetuition.com

Email:asherrana@chemistryonlinetuition.com

PURE MATH

ALGEBRA AND FUNCTION

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	CIRCLES
PAPER TYPE:	QUESTION PAPER - 4
TOTAL QUESTIONS	8
TOTAL MARKS	64

ChemistryOnlineTuition Ltd reserves the right to take legal action against any individual/ company/organization involved in copyright abuse.

Questions

Q1.

(i) A circle C_1 has equation

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

The line *l* is the tangent to C1 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.

(ii) A different circle C₂ 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)

(5)

(Total for question = 8 marks)



Find an equation of a circle of radius *a* and lying in the second quadrant such that it is tangent to both the axes.

(7) (Total for question = 7 marks)

Q3.

Show that the lines 3x - 2y = 0 and 2x + 3y - 13 = 0 are tangents to the circle $x^2 + y^2 + 6x - 4y = 0$

> (6) (Total for question = 6 marks)



Q4.

Show that the circles

 $x^{2} + y^{2} + 2x - 2y - 7 = 0$ and $x^{2} + y^{2} - 6x + 4y - 9 = 0$ touch externally.

(7) (Total for question = 7 marks)

Q5.

Show that the circles

 $x^{2} + y^{2} + 2x - 8 = 0$ and $x^{2} + y^{2} - 6x + 6y - 46 = 0$ touch internally

(7)

(Total for question = 5 marks)



Q6.

Find equations of the circle of radius 2 and tangent to the line

x - y - 4 = 0 at A(1, -3).

(8) (Total for question = 8 marks)

Q7.

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

(5)

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.

(3)

(Total for question = 8 marks)

Q8.

The Circle *C* has the equation $x^2 + y^2 - 8x + 6y + 16 = 0$ (a) Find the coordinates of the center of C4. (4) (b) Find the radius of C4. (2) (c) Find the range of values for k. (3) (Total for question = 9 marks)



CEIN



- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- · Chemistry, Physics, and Math's Tutor

CONTACT INFORMATION FOR CHEMISTRY ONLINE TUITION

- · UK Contact: 02081445350
- International Phone/WhatsApp: 00442081445350
- · Website: www.chemistryonlinetuition.com
- · Email: asherrana@chemistryonlinetuition.com

Address: 210-Old Brompton Road, London SW5 OBS, UK