



Geometry 2 Questions

The Line

Question 1:

The coordinates of 3 points A, B and C are:

A (2,2), B (6,-6) and C(-2,-3)

- Find the equation of AB.
- The line AB intersects the y-axis at D.
Find the coordinates of D.
- Find the perpendicular distance from C to AB.
- Hence, find the area of the triangle ADC.

The Circle

Question 2

A circle has centre (2,3) and contains the point (8,9)

- Sketch the circle
- Find the radius length of the circle
- Write down the equation of the circle

Question 3

The line segment joining A(-5,3) and B(5,-3) is the diameter of a circle

- Sketch the circle
- Find the centre of the circle
- Find the radius length of the circle



- d) Write down the equation of the circle
- e) Using the formula $\text{Area} = \pi r^2$ find the area of the circle. Give your answer correct to two decimal places.
- f) Find the area of the square in which the circle can be inscribed

Question 4

The equations of two circles are:

$$c_1 : x^2 + y^2 - 6x - 10y + 29 = 0$$

$$c_2 : x^2 + y^2 - 2x - 2y - 43 = 0$$

- a) Write down the centre and radius-length of each circle.
- b) Prove that the circles are touching.
- c) Verify that (4, 7) is the point that they have in common.
- d) Find the equation of the common tangent.

Question 5

A circle passes through the point (3,3) and the point (4,1).

If the centre of the circle is on the line $x + 3y = 12$, find its equation.

NB: Draw a rough sketch of the circle and the line above

Question 6

The line $3x - 4y + 14 = 0$ is tangent to a circle at the point

(-2, 2). The circle also contains the point (5,1)

- a) Draw a rough sketch of the circle.
- b) Find the equation of the circle.

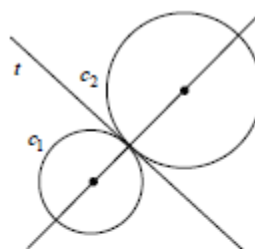
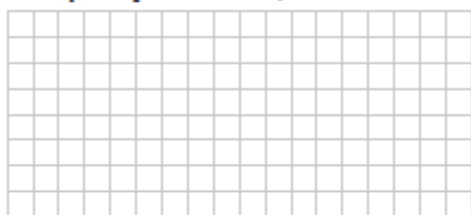


Question 7

- (a) Draw the circle $c: x^2 + y^2 = 25$. Show your scale on both axes.
- (b) Verify, using algebra, that $A(-4, 3)$ is on c .
- (c) Find the equation of the circle with centre $(-4, 3)$ that passes through the point $(3, 4)$.

Question 8

The circles c_1 and c_2 touch externally as shown.



- (a) Complete the following table:

Circle	Centre	Radius	Equation
c_1	$(-3, -2)$	2	
c_2			$x^2 + y^2 - 2x - 2y - 7 = 0$

- (b) (i) Find the co-ordinates of the point of contact of c_1 and c_2 .
- (ii) Hence, or otherwise, find the equation of the tangent, t , common to c_1 and c_2 .

Question 9

The centre of a circle lies on the line $x + 2y - 6 = 0$. The x -axis and the y -axis are tangents to the circle. There are two circles that satisfy these conditions. Find their equations.