

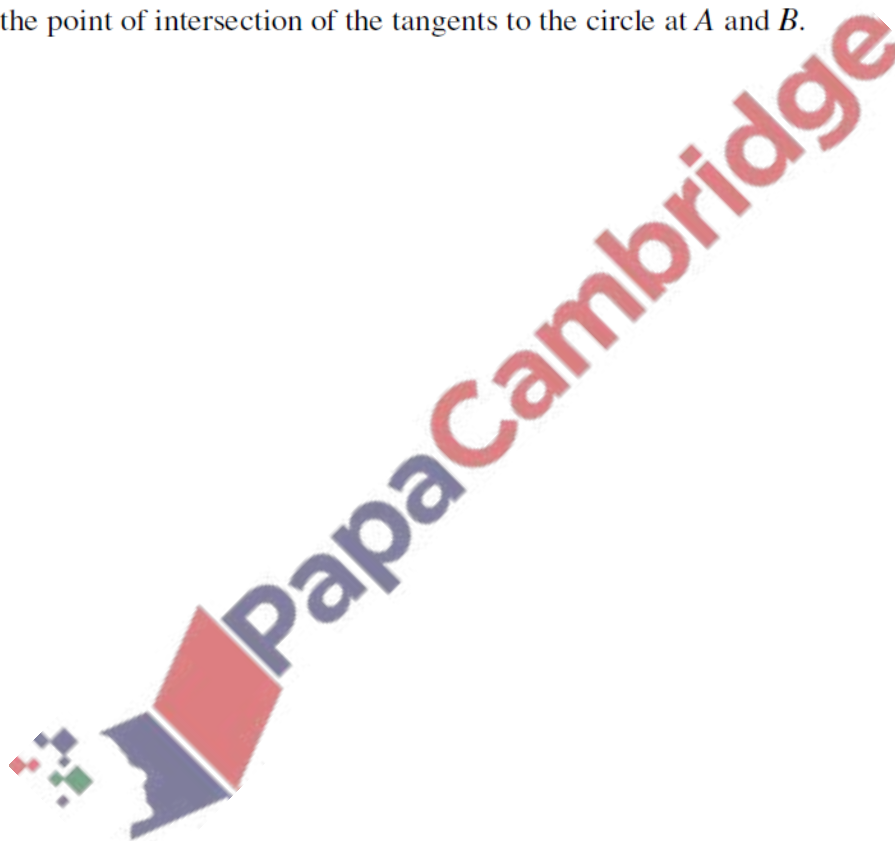
Coordinate Geometry – 2021 AS

1. June/2021/Paper_9709/11/No.10

The equation of a circle is $x^2 + y^2 - 4x + 6y - 77 = 0$.

(a) Find the x -coordinates of the points A and B where the circle intersects the x -axis. [2]

(b) Find the point of intersection of the tangents to the circle at A and B . [6]

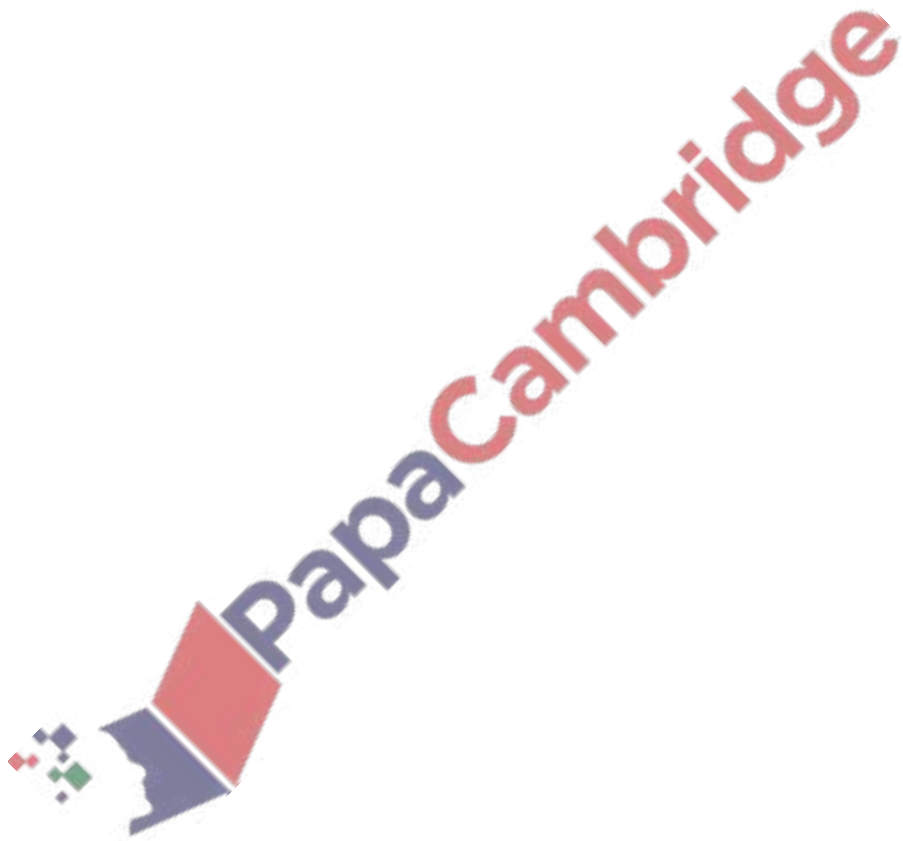


2. June/2021/Paper_9709/11/No.6

Points A and B have coordinates $(8, 3)$ and (p, q) respectively. The equation of the perpendicular bisector of AB is $y = -2x + 4$.

Find the values of p and q .

[4]

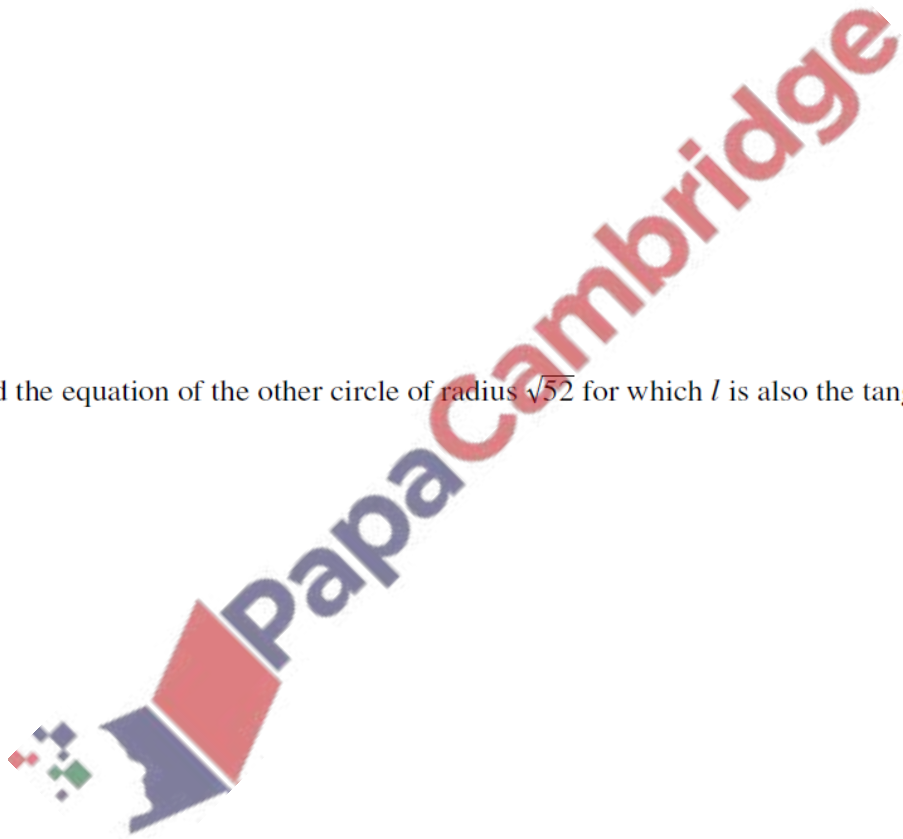


3. June/2021/Paper_9709/12/No.7

The point A has coordinates $(1, 5)$ and the line l has gradient $-\frac{2}{3}$ and passes through A . A circle has centre $(5, 11)$ and radius $\sqrt{52}$.

(a) Show that l is the tangent to the circle at A . [2]

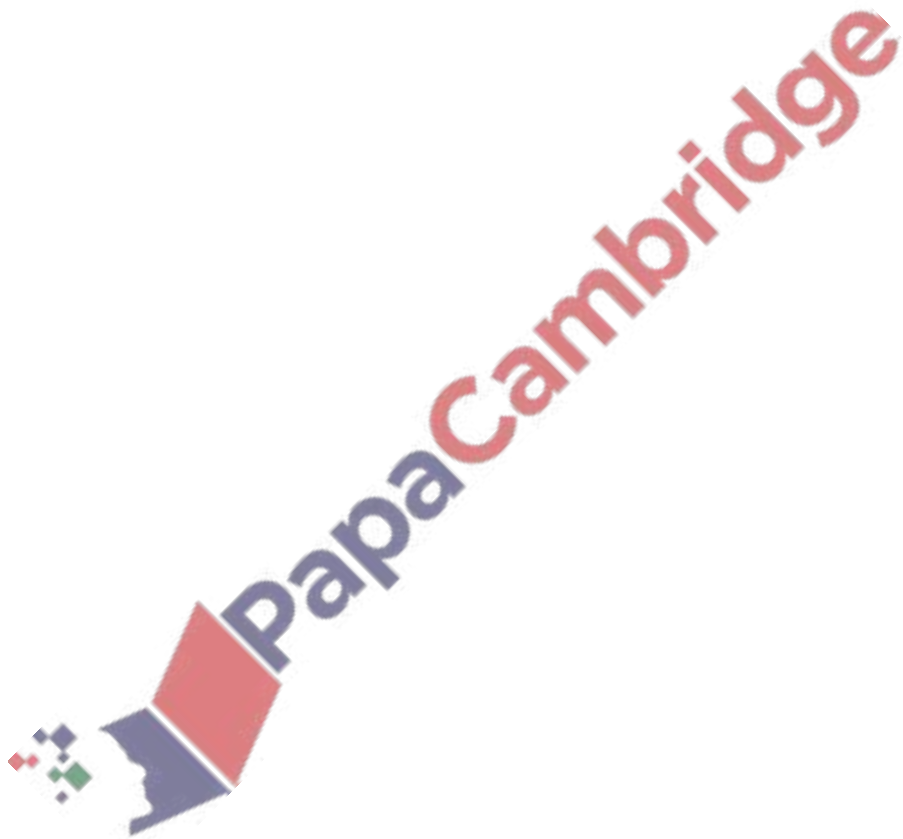
(b) Find the equation of the other circle of radius $\sqrt{52}$ for which l is also the tangent at A . [3]



4. June/2021/Paper_9709/13/No.3

A line with equation $y = mx - 6$ is a tangent to the curve with equation $y = x^2 - 4x + 3$.

Find the possible values of the constant m , and the corresponding coordinates of the points at which the line touches the curve. [6]



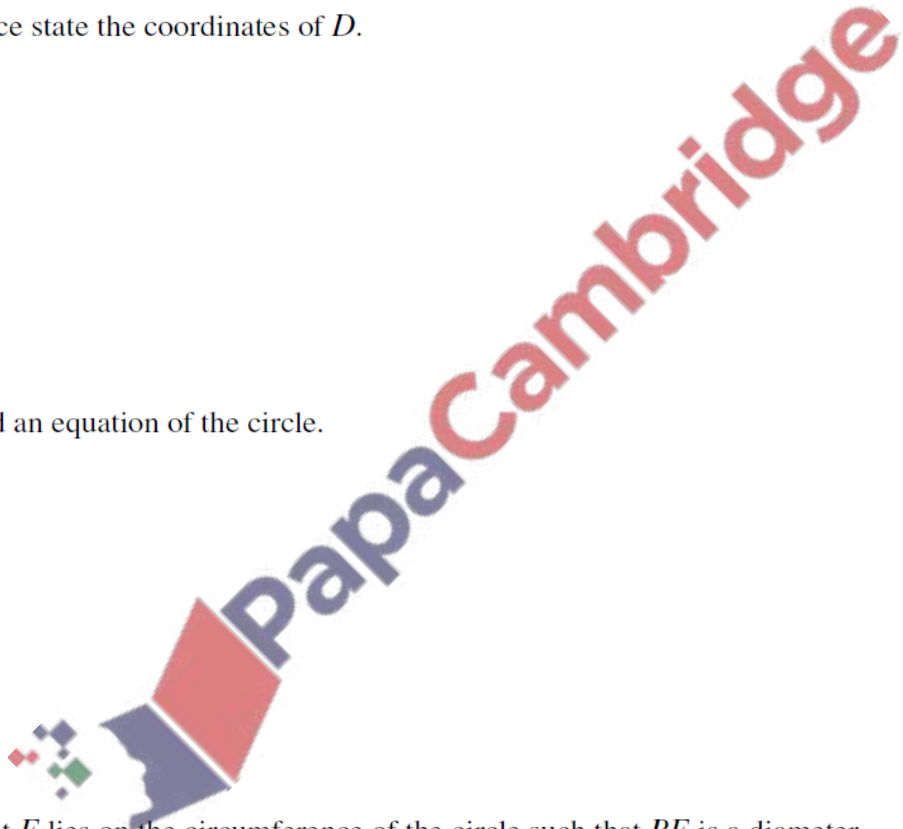
5. June/2021/Paper_9709/13/No.10

Points $A(-2, 3)$, $B(3, 0)$ and $C(6, 5)$ lie on the circumference of a circle with centre D .

(a) Show that angle $ABC = 90^\circ$. [2]

(b) Hence state the coordinates of D . [1]

(c) Find an equation of the circle. [2]



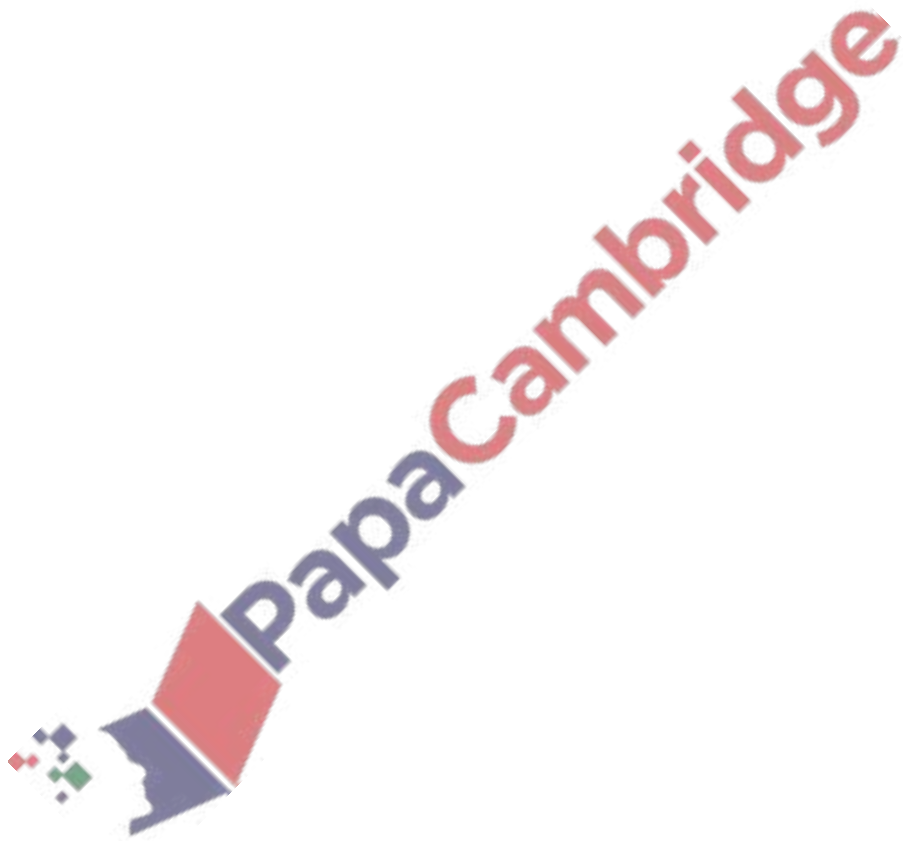
The point E lies on the circumference of the circle such that BE is a diameter.

(d) Find an equation of the tangent to the circle at E . [5]

6. March/2021/Paper_9709/12/No.4

A line has equation $y = 3x + k$ and a curve has equation $y = x^2 + kx + 6$, where k is a constant.

Find the set of values of k for which the line and curve have two distinct points of intersection. [5]



7. March/2021/Paper_9709/12/No.8

The points $A(7, 1)$, $B(7, 9)$ and $C(1, 9)$ are on the circumference of a circle.

(a) Find an equation of the circle.

[5]

(b) Find an equation of the tangent to the circle at B .

[2]

