

- 10** A circle has equation $x^2 + y^2 + 4y - 21 = 0$ and a straight line has equation $2x + y - 8 = 0$. The line intersects the circle at two points.

- (a) Find the coordinates of these two points of intersection.

[4]

(b) The circle has centre C and the two points of intersection are denoted by A and B .

Find the area of the triangle ABC .

[3]

- 7 The coordinates of the points P and Q are $(1, 1)$ and $(7, 11)$ respectively. The line segment PQ forms a diameter of a circle.

- (a) Find the equation of the circle.

[4]

- (b)** Find the equation of the tangent to the circle at the point Q .

[3]

- (c) The other point on the circle with x -coordinate 7 is R .

Find the coordinates of the point of intersection of the tangent at Q with the tangent at R .

[4]

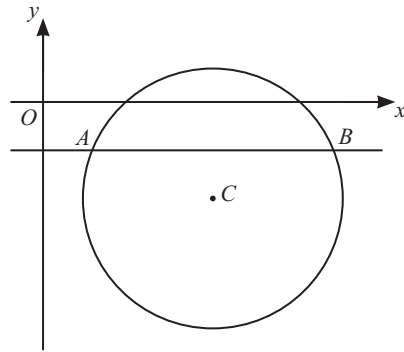
- 6 The equation of a curve is $2x^2 - kxy + 2 = 0$ and the equation of a line is $y = px + 3$, where k and p are constants.

- (a) Given that $k = 2$ and $p = 11$, find the coordinates of the points of intersection of the curve and the line. [4]

- (b) Given instead that $p = 4$, find the set of values of k for which the curve and the line do not intersect. [5]

- 8 The circle with equation $x^2 + y^2 - 6x + 10y - 27 = 0$ intersects the line $x = -2$ at the points P and Q .

Find the area of the triangle formed by the tangents to the circle at P and Q , and the line $x = -2$. [8]



(a) Find the coordinates of A , B and C . [3]

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[3]

[2]

(c) The chord AB divides the circle into two segments.

Find the area of the larger segment.

[4]