🔔 **Review questions**

Q1   Hint   Solution

Prove that the points whose coordinates satisfy the equation

$$x^2 + y^2 + 2gx + 2fy + c = 0$$

lie on a circle. State the coordinates of the centre of the circle and the length of its radius.

Prove that the circles

$$x^2 + y^2 - 20x - 16y + 128 = 0$$

and

$$4x^2 + 4y^2 + 16x - 24y - 29 = 0$$

lie entirely outside each other, and find the length of the shortest distance from a point on one circle to a point on the other.

UCLES A level Maths, QP 185/2, June 1953, Q2.
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Q2   Hint   Solution

Show that the four points $(3, 0)$, $(0, 4)$, $(3, 4)$, $(4, 2)$ lie on a circle.

Find the centre and radius of this circle.

UCLES A level Maths 1, Syllabus A, Pure Mathematics 1, 9200/1, 9208/1, 1987, Q6.
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Q3   Hint   Solution

Find the equation of the circle through the points $A\,(2, 0)$, $B\,(8, 0)$, and $C\,(10, 4)$, and prove that it touches the y-axis.

Without the use of tables [or calculators] or measurement, find the equation of the the other tangent to this circle from the origin.

UCLES A level Maths, QP 417/2 and 447/2, June 1963, Q2.
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Q4   Hint   Solution

Prove that the line $y = mx + c$ will touch the circle $x^2 + y^2 = 25$ if $c^2 = 25(1 + m^2)$. Hence or otherwise find the equations of the two tangents to this circle from the point $(2, 11)$.

Q5   Hint   Solution

Show that the circles having equations $x^2 + y^2 = 25$ and $x^2 + y^2 - 24x - 18y + 125 = 0$ touch each other. Calculate the coordinates of the point at which they touch.

Printables

🖶 PDF version (./index.pdf)

Relevance

 G2 (../../stations/G2.html) What is the connection between algebra and geometry, and how can we exploit it?