

lineal figure, we can form a rectilineal figure circumscribing the circle equiangular to the former.

596. Find a mean proportional between two similar right-angled triangles which have one of the sides containing the right angle common.

597. In the sides AC , BC of a triangle ABC points D and E are taken, such that CD and CE are respectively the third parts of AC and BC ; BD and AE are drawn intersecting at O : shew that EO and DO are respectively the fourth parts of AE and BD .

598. CA , CB are diameters of two circles which touch each other externally at C ; a chord AD of the former circle, when produced, touches the latter at E , while a chord BF of the latter, when produced, touches the former at G : shew that the rectangle contained by AD and BF is four times that contained by DE and FG .

599. Two circles intersect at A , and BAC is drawn meeting them at B and C ; with B , C as centres are described two circles each of which intersects one of the former at right angles: shew that these circles and the circle whose diameter is BC meet at a point.

600. $ABCDEF$ is a regular hexagon: shew that BF divides AD in the ratio of one to three.

601. ABC , DEF are triangles, having the angle A equal to the angle D ; and AB is equal to DF : shew that the areas of the triangles are as AC to DE .

602. If M , N be the points at which the inscribed and an escribed circle touch the side AC of a triangle ABC ; shew that if BM be produced to cut the escribed circle again at P , then NP is a diameter.

603. The angle A of a triangle ABC is a right angle, and D is the foot of the perpendicular from A on BC ; DM , DN are perpendiculars on AB , AC : shew that the angles BMC , BNC are equal.

604. If from the point of bisection of any given arc of a circle two straight lines be drawn, cutting the chord of the arc and the circumference, the four points of intersection shall also lie in the circumference of a circle.

605. The side AB of a triangle ABC is touched by the inscribed circle at D , and by the escribed circle at E : shew that the rectangle contained by the radii is equal to the rectangle AD , DB and to the rectangle AE , EB .