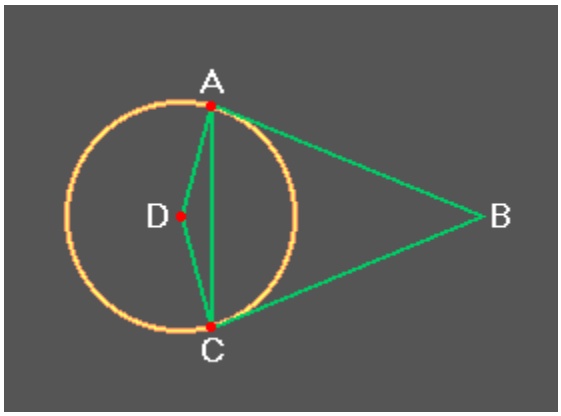
Answer on Question #60109 – Math – Geometry

Question

Given AB and BC are tangents of the circle with center D and the ∠ACD=15°, what is the measure of $\angle ABC$?

Solution



Triangle $\triangle ACD$ is isosceles, because AD and CD have the same measure as radii of circle, hence $\measuredangle ACD = \measuredangle CAD = 15^0.$

Using the triangle sum property 'the total measure of the interior angles in any triangle is 180°' calculate

$$\measuredangle ADC = 180^0 - 15^0 - 15^0 = 150^0.$$

Tangents AB and BC always form a right angle with the circle's radius, therefore,

$$\measuredangle DAB = \measuredangle DCB = 90^0.$$

Using the statement 'the total measure of the interior angles of a quadrilateral is 360°' finally obtain

$$\measuredangle ABC = 360^{\circ} - \measuredangle ADC - \measuredangle DAB - \measuredangle DCB = 360^0 - 150^0 - 90^0 - 90^0 = 30^0.$$

Answer: 30^0.