

Russian Teachers' Geometry Olympiad from the Republic of Adygea

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by parmenides51

- 1
 - a) Two circles of radii 6 and 24 are tangent externally. Line ℓ touches the first circle at point A , and the second at point B . Find AB .
 - b) The distance between the centers O_1 and O_2 of circles of radii 6 and 24 is 36. Line ℓ touches the first circle at point A , and the second at point B and intersects O_1O_2 . Find AB .

- 2 In triangle ABC , the incircle touches the side AC at point B_1 and one excircle is touching the same side at point B_2 . It is known that the segments BB_1 and BB_2 are equal. Is it true that $\triangle ABC$ is isosceles?

- 3 In a triangle, one excircle touches side AB at point C_1 and the other touches side BC at point A_1 . Prove that on the straight line A_1C_1 the constructed excircles cut out equal segments.

- 4 Two identical balls of radius $\sqrt{15}$ and two identical balls of a smaller radius are located on a plane so that each ball touches the other three. Find the area of the surface S of the ball with the smaller radius.
