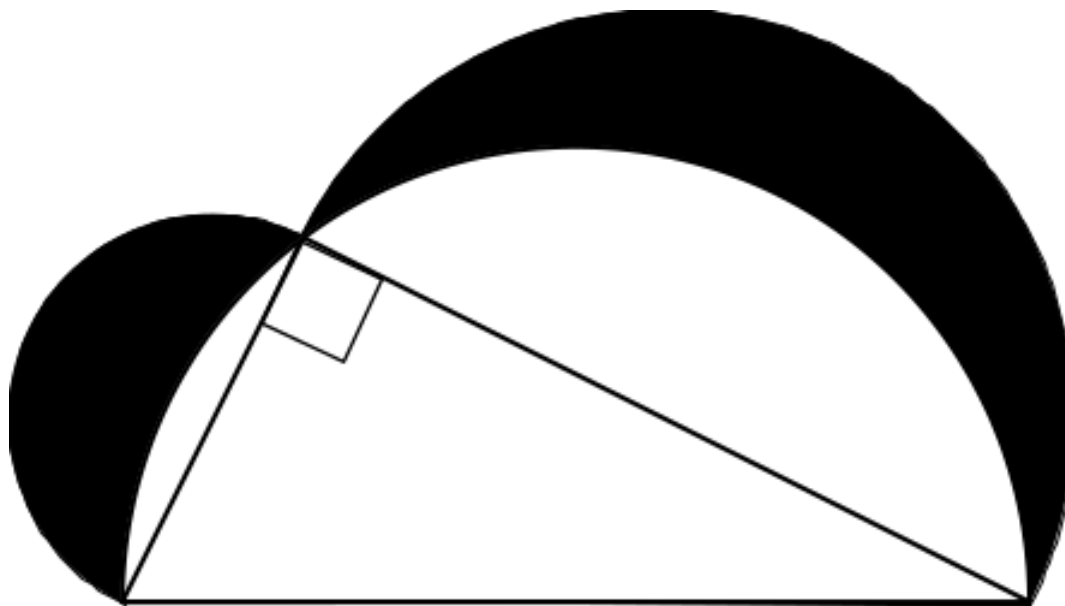


Mathematics 1110H – Calculus I: Limits, Derivatives, and Integrals

TRENT UNIVERSITY, Summer 2026 (S62) [reading course]

Quiz #5

Due just before midnight on Tuesday, 28 July. (The last day of classes.)*



A semicircle is placed on each of the sides of a right triangle with area 6, each having the given side of the triangle be the semicircle's base. The semicircles on the short sides are outside the triangle and the semicircle on the hypotenuse includes the triangle, as in the diagram above. (In fact, the vertex with the right angle must necessarily be on the latter semicircle.) Consider the region that is left over when the combined semicircles on the short sides has the parts that fall in the semicircle on the hypotenuse cut away; that is, the region that is shaded in the diagram.

1. What is the area of the shaded region? [5]

* Note that Wednesday, 1 July, is Canada Day. You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If that fails, please submit directly to the instructor on paper or via email to sbilaniuk@trentu.ca. You may work with others, use whatever tools you like, and look things up, so long as you write up your submission by yourself and give due credit to your collaborators and any tools or sources you actually used.