

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

TRENT UNIVERSITY, Winter 2021

Quiz #5

Tuesday, 23 February.

Available on Blackboard at 12:00 a.m. Tuesday morning.

Due on Blackboard by 11:59 p.m. Tuesday night.

Solutions will be posted on Thursday, 25 February.

Submission: Scanned or photographed solutions are fine, so long as they are legible. Please try to make sure that they are oriented correctly – if they are sideways or upside down, they're rather harder to mark! Submission as a single pdf is strongly preferred, but multiple files and/or other common formats are probably OK in a pinch. Please submit your solutions via Blackboard's Assignments module; if Blackboard does not acknowledge a successful upload, please try again. As a *last* resort, email your solutions to the instructor at: `sbilaniuk@trentu.ca`

Reminder: Per the course outline, *all work submitted for credit must be written up entirely by yourself, giving due credit to all relevant sources of help and information.* For this quiz, you are permitted to use your textbook and all other course material, from this and any other mathematics course(s) you have taken or are taking now, but *you may not use any other sources or aids, nor give or receive any help*, except to ask the instructor to clarify questions and to use a calculator (any that you like).

Do *both* of the following questions. Show all your work! Simplify where you conveniently can.

1. Find the domain and all of the vertical and horizontal asymptotes, if any, of

$$f(x) = \ln\left(\frac{\pi}{2} - \arctan(x)\right). \quad [2]$$

2. Find the domain and all of the vertical and horizontal asymptotes, if any, of

$$g(x) = \frac{\ln(x) - \ln(x+1)}{\ln(x) - \ln(x-1)}. \quad [3]$$

[Total = 5]