

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

TRENT UNIVERSITY, Summer 2023 (S61)

### Quiz #5

*Due\* just before midnight on Tuesday, 23 May.*

Do all three of the following questions. Please show all your work and simplify your answers as much as is reasonably possible, which might not be much.

1. Find the derivative of  $f(x) = \arccos(x)$  using the fact that  $\arccos(x)$  is the inverse function of (part of)  $\cos(x)$ . [1.5]
2. Compute  $\lim_{x \rightarrow 1} \frac{e^{(x-1)^2} - 1}{(x-1)^3}$ . [1.5]
3. Find  $\frac{dy}{dx}$  at  $(x, y) = (-1, \sqrt{3 + 2\sqrt{3}})$  if  $(x^2 + y^2)^2 + 4x(x^2 + y^2) - 4y^2 = 0$ . [2]

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\* You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If this fails, you may submit your work to the instructor on paper or by email to [sbilaniuk@trentu.ca](mailto:sbilaniuk@trentu.ca).