

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

TRENT UNIVERSITY, Summer 2023 (S61)

Quiz #11

More Integration

Due just before midnight on Tuesday, 13 June.*

Please show all your work when answering the questions below. Do them by hand, please! Feel free to check your work using SageMath, though.

1. Work out $\int \sinh(x) \cos(x) dx$. [2.5]

NOTE: Recall that $\sinh(x) = \frac{e^x - e^{-x}}{2}$ and $\cosh(x) = \frac{e^x + e^{-x}}{2}$. These two functions are each other's derivatives, and hence also each other's antiderivatives. That is a $\cos(x)$ in the integral, though, not a $\cosh(x)$.

2. Compute $\int_0^1 x \arctan(x) dx$. [2.5]

NOTE: Just in case, $\arctan(0) = 0$ and $\arctan(1) = \frac{\pi}{4}$.

* 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.