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 $\sinh(x) = \dfrac{e^x - e^{-x}}{2}$ and $\cosh(x) = \dfrac{e^x + e^{-x}}{2}$. 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 $\arctan(1) = \dfrac{\pi}{4}$.