Mathematics 1110H (Section B) – Calculus I: Limits, Derivatives, and Integrals
Trent University, Fall 2023
Quiz #2
A Probably Useless Trigonometric Identity
Due* just before midnight on Wednesday, 20 September.

REMINDER. While you are allowed to work together and look things up when doing the quizzes and assignments, your submission should be written up entirely by yourself, giving credit to any collaborators or sources that you ended up actually using.

NOTE. All angles in this course, unless stated otherwise, are measured in radians, as this will be more convenient once we actually start doing calculus. If you are not familiar with radian measure, please read Section 4.1 of the textbook. For this assignment, you will need to know, in particular, that $\frac{\pi}{4}$ radians is the same angle as $45°$.

1. Using the trigonometric identities you know and special values of the basic trigonometric functions, verify that

$$\tan(2x) = \frac{\sin(x)\cos(x)}{\left(\cos(x) + \sin\left(\frac{\pi}{4}\right)\right)\left(\cos(x) - \sin\left(\frac{\pi}{4}\right)\right)}$$

   for those values of x for which this equation is defined. *[4]*

2. For which values of x is the equation in **1** above actually defined? *[1]*