Mathematics 1100Y – Calculus I: Calculus of one variable
Trent University, Summer 2011

Assignment #6
Numerical solutions
Due on Monday, 20 June, 2011.

1. Use `Maple` to compute $\int_{-\infty}^{\infty} e^{-x^2} \, dx$. *[5]*

2. Find the value of t such that $\int_{-t}^{t} e^{-x^2} \, dx = \dfrac{1}{2}$. *[5]*

Your main tool for **1**, at least in worksheet mode, should be the `int` command, which can be used for both symbolic and numerical integration. The additional tool you will need for **2**, at least in worksheet mode, is the `fsolve` command, which is used to find numerical solutions to equations. Look them up in `Maple`'s help! These commands normally expect you to specify a variable to integrate with respect to or solve for, respectively.

By the way, you can express ∞ in worksheet mode by typing `infinity`.

Bonus: Recall that a real number is *rational* if it can be written as a ratio of integers, and *irrational* if it is not rational. Show that there are irrational numbers a and b such that a^b is rational. ($a = b$ is allowed, if you can pull it off.) *[1]*