

MAT 215: PROBLEM SET 9

DUE THURSDAY APRIL 14

Reading: Abbot, Sections 6.5-6.7

Problem 1: Let $f(x) = \left(\int_0^x e^{-t^2} dt \right)^2$ and $g(x) = \int_0^1 \frac{e^{-x^2(t^2+1)}}{t^2+1} dt$.

(i) Show that $f'(x) + g'(x) = 0$ for all $x \in \mathbb{R}$.

(ii) Find $\int_0^\infty e^{-t^2} dt$.

Abbot exercises: 7.5.1, 7.5.8, 6.2.1, 6.2.7, 6.3.2, 6.4.4.