Dept. of Math. Sci., WPI
MA 571 Financial Mathematics I
Instructor: Bogdan Doytchinov, Fall Term 2003

Homework Assignment 6
Due Thursday, October 30, 2003

Problem 1. On $(\mathbb{R}, \mathcal{B}(\mathbb{R}))$ define two measures, μ and ν, by

$$\mu(B) = \int_{[0,\infty)} \mathbf{1}_B 2e^{-2x}\, dx,$$

$$\nu(B) = \int_{\mathbb{R}} \mathbf{1}_B e^{-2|x|}\, dx,$$

for $B \in \mathcal{B}(\mathbb{R})$.

(a) Show that $\mu \ll \nu$ and find the Radon–Nikodým derivative

$$\varphi = \frac{d\mu}{d\nu}.$$

(b) Is $\nu \ll \mu$? Explain.

Problems 2-6. Solve the following problems from the book:
  page 17: 1.29; page 65: 3.9; page 182: 8.3, 8.11; page 214: 10.8