Winter term 2026/2027
Marco Rehmeier

# Execises to Fokker–Planck equations

Sheet 2
Class: 13.11.2026

**Problem 1** (Example of nonuniqueness: degenerate case)**.**

Let $d = 1$, $a = 0$, $b(x) = x^{\frac{2}{3}}$ and $y^1 = 0$, $y^2(t) = \frac{t^3}{27}$ be two solutions to the ODE $\dot{y} = b(y), y(0) = 0$.

*Prove:* $(\mu_t^i)_{t\geqslant 0}, \mu_t^i = \delta_{y^i(t)}$, are probability solutions to the FPE with $a$, $b$ and initial datum $\delta_0$. Here $\delta_x$ denotes the Dirac measure in $x \in \mathbb{R}$.

Besides the short Problem 1, I would like to use the tutorial on 13.11. for an additional lecture to make up for the two missed lectures in the first two semester weeks.