

NB! This ONLY applies to Assignment 4 (MI)

Correction to Problem 2

In the beginning of the problem, a number of assumptions on φ are stated:

Naturally, we assume that φ is C^2 on $\mathbb{R} \times (0, \infty)$ and continuous on $\mathbb{R} \times [0, \infty)$. But in addition to this, we also assume that

- *the function $x \mapsto \varphi(x, y)$ is integrable on \mathbb{R} for each $y > 0$,*
- *$\frac{\partial \varphi}{\partial y}$, $\frac{\partial \varphi}{\partial x}$, $\frac{\partial^2 \varphi}{\partial x^2}$ are integrable as functions of $x \in \mathbb{R}$ and for fixed $y > 0$.*

The assumption on $\frac{\partial \varphi}{\partial y}$ should be changed!

Instead of assuming that $\frac{\partial \varphi}{\partial y}$ is integrable as a function of $x \in \mathbb{R}$ and for fixed $y > 0$, assume the following stronger statement:

- *for every bounded interval $I \subset (0, \infty)$, there is a function $h \in \mathcal{L}_1(\mathbb{R})$ such that*

$$\left| \frac{\partial \varphi}{\partial y}(x, y) \right| \leq h(x) \text{ for } x \in \mathbb{R} \text{ and } y \in I.$$