Exercises

E17.d.10 [1GX]Prerequisites:[162].

We work in the hypotheses of the theorem [1GD]. Show that, if $f(\cdot, y)$ is Lipschitz of constant L for every fixed y, i.e.

$$|f(x_1', y) - f(x_2', y)| \le L|x_1' - x_2'| \ \ \forall x_1', x_2 \in U', y \in J$$

(and $L > 0$ does not depend on x_1', x_2', y), then g is Lipschitz of constant L'. What is the relationship between the constants L and L'?

Similarly if f is Hölderian.

Solution 1. [1GY]