Lemma 23.15. [1R7] *Let $U \subseteq \mathbb{R}^2$ be open, let $f, g : U \to \mathbb{R}$ be continuous with $f \geq g$; let $I \subseteq \mathbb{R}$ be an open interval with $t_0 \in I$, and let $x, w : I \to \mathbb{R}$ solutions of*

$$x'(t) = f(t, x(t)) \quad , \quad w(t) = g(t, w(t))$$

with $x(t_0) \geq w(t_0)$: then $x(t) \geq w(t)$ for $t \geq t_0$. Note indeed that $x'(t) \geq w'(t)$ and therefore $x(t) - w(t)$ is an increasing function.