$$\int_1^\infty \frac{1}{x}\,dx = \lim_{T\to\infty}\int_1^T \frac{1}{x}\,dx = \lim_{T\to\infty}\Big[\ln|x|\Big]_1^T = \lim_{T\to\infty}\ln T = \underline{\underline{\infty}}.$$

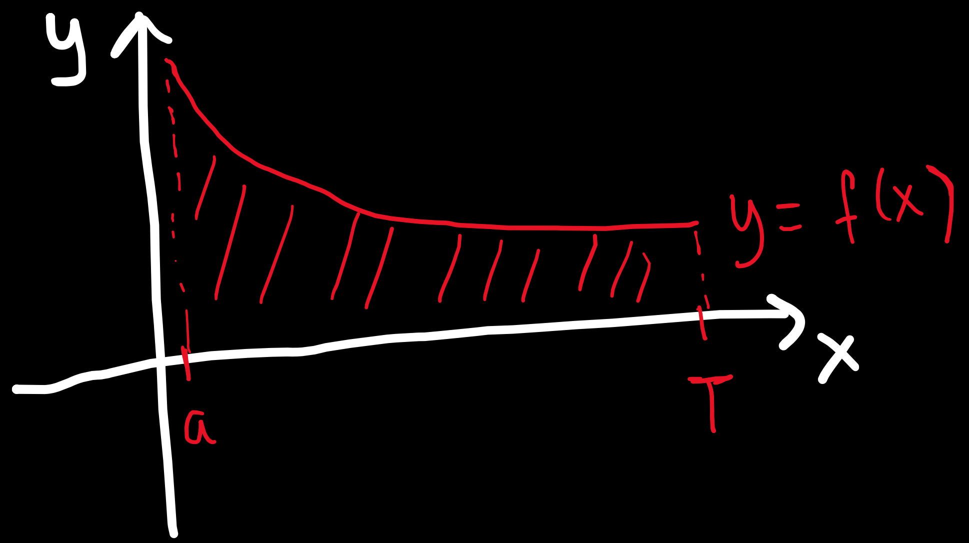
<u>divergent.</u>

$$\int_1^\infty \cos x\,dx = \lim_{T\to\infty}\int_1^T \cos x\,dx = \lim_{T\to\infty}\Big[\sin x\Big]_1^T = \lim_{T\to\infty}(\sin T - \sin 1)$$

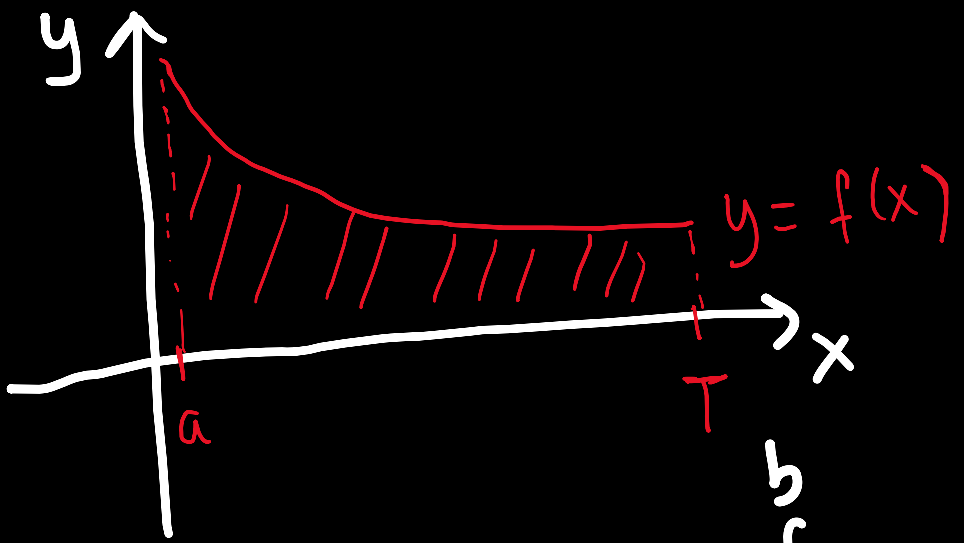
G.V. existerar

ej $\Rightarrow$ <u>divergent.</u>

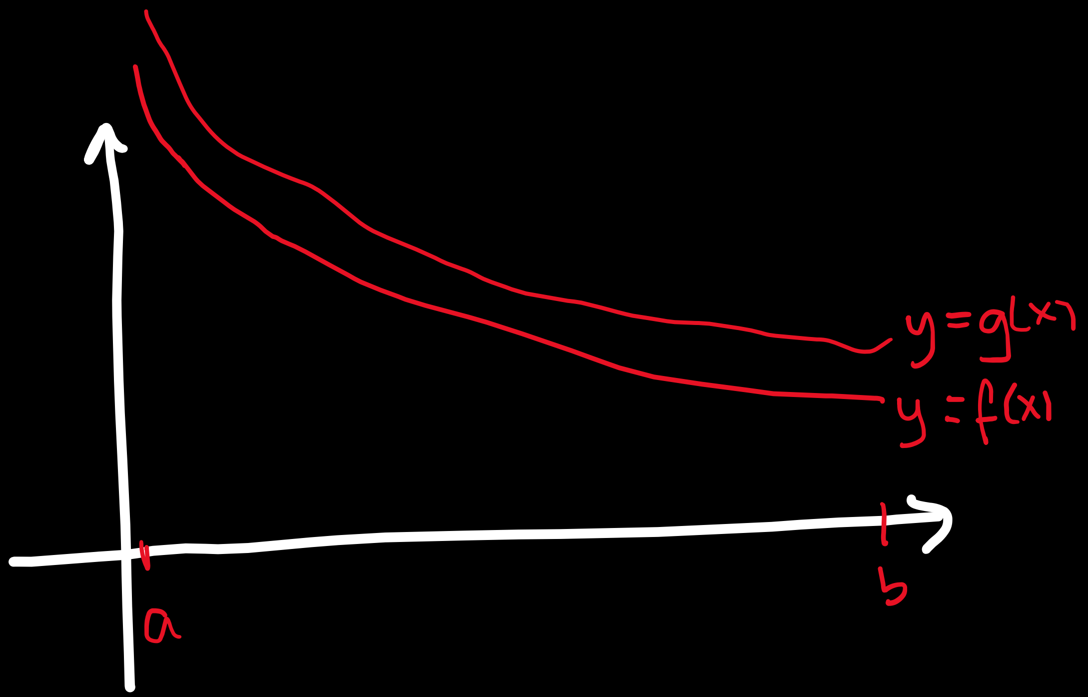
Positiv integrand:



Positiv integrand:



- Om $f(x) \geq 0$ kan $\int_a^b f(x)\,dx$ tolkas som arean under grafen.
- $\int_a^b f(x)\,dx$ divergent $\Leftrightarrow$ $\int_a^b f(x)\,dx = \infty$ $\underline{\underline{\text{om } f(x) \geq 0.}}$



Om $0 \leq f(x) \leq g(x)$ för alla $a \leq x \leq b$

så gäller $0 \leq \int_a^b f(x)\,dx \leq \int_a^b g(x)\,dx.$