Theorem (3.2.1d)**.** *Let f be the function defined by $f(x) = 5 \log x$.*
$f(x)$ is $\mathcal{O}(x)$.

Proof. Let g be the function defined by $g(x) = x$. It is clear that the inequality $|5 \log x| \leq 5|x|$ is true for all $x > 1$. Therefore, $|f(x)| \leq 5|g(x)|$, for all $x > 1$. It follows from the definition of big-O notation that $f(x)$ is $\mathcal{O}(x)$ with constant witnesses $C = 5$, and $k = 1$. ■