Theorem (3.2.1b)**.** *Let f be the function defined by f(x) = 3x + 7. f(x) is* $\mathcal{O}(x)$.

Proof. Let g be the function defined by $g(x) = x$. Then $|3x + 7| \leq 5|x|$, for all $x > 4$ means that $|f(x)| \leq 5|g(x)|$,for all $x > 4$. Therefore $f(x)$ is $\mathcal{O}(x)$, with constant witnesses $C = 5$, and $k = 4$, by definition. ■