

2. [10 points] On the axes provided below, sketch the graph of a single function $k(x)$ that satisfies all of the following conditions.

- $k'(x)$ and $k''(x)$ exist and are positive on $-8 < x < -5$.
- $\lim_{x \rightarrow -5} k(x) = 1$.
- $k(x)$ is defined at $x = -5$ but is not continuous there.
- The average rate of change of $k(x)$ from -4 to 2 is $\frac{2}{3}$.
- $k(x)$ is defined and continuous on the interval $-4 \leq x \leq 2$, but does not satisfy the hypotheses of the Mean Value Theorem on this interval.
- On the interval $3 < x < 8$, the function $k(x)$ is the derivative of the function $g(x)$, which is shown in the graph to the right. Note that the graph of $g(x)$ has corners at $x = 4$ and $x = 6$.

