

8. (10 points) On the axes below, sketch a graph of a single, continuous, twice differentiable function f with all of the following properties. Be sure to clearly label your axes.

- $f(0) = 0$ and $\lim_{x \rightarrow \infty} f(x) = 4$
- $f'(x) = 0$ for $x = -2, 3$
- $f'(x) \geq 0$ for $-\infty < x < 3$
- $f'(x) < 0$ for $x > 3$
- $f''(x) = 0$ for $x = -2, 1, 5$
- $f''(x) > 0$ for $-2 < x < 1$
- $f''(x) < 0$ for $-\infty < x < -2$ and $1 < x < 5$

