

6. [11 points] On the axes provided below, sketch the graph of a single function  $y = g(x)$  satisfying all of the following:

- $g(x)$  is defined for all  $x$  in the interval  $-6 < x < 6$ .
- $g(x)$  has at least 5 critical points in the interval  $-6 < x < 6$ .
- The global maximum value of  $g(x)$  on the interval  $-5 \leq x \leq -3$  is 4, and this occurs at  $x = -4$ .
- $g(x)$  is not continuous at  $x = -2$ .
- $g'(x)$  (the derivative of  $g$ ) has a local maximum at  $x = 0$ .
- $g(x)$  is continuous but not differentiable at  $x = 1$ .
- $g''(x) \geq 0$  for all  $x$  in the interval  $2 < x < 4$ .
- $g(x)$  has at least one local minimum on the interval  $4 < x < 6$  but does not have a global minimum on the interval  $4 < x < 6$ .
- $g(x)$  has an inflection point at  $x = 5$ .

*Make sure your sketch is large and unambiguous.*

Graph of  $y = g(x)$

