5. [12 points] A function g defined for all real numbers has the following properties:

(a) g is differentiable for $-1 \leq x < 4$.

(b) $g'(x) \leq 0$ for $-1 \leq x < 4$.

(c) $g''(x) > 0$ for $2 < x < 4$.

(d) $g(4) = -2$.

(e) $\lim_{x \to 4} g(x) = 0$.

(f) g is continuous at $x = 5$ but not differentiable at $x = 5$.

(g) $g'(0) = 0$.

On the axes below, draw a possible sketch of $y = g(x)$ on the domain $-1 \leq x \leq 6$, including labels.