2.(8 points) On the axes below, sketch a graph of a single function, $g$, with all of the following properties.

- $g(0)=2$
- $g^{\prime}(x)>0$ for $x<5$
- $g^{\prime \prime}(x)>0$ for $x<0$
- $g^{\prime \prime}(x)<0$ for $0<x<5$
- $\lim _{x \rightarrow 5^{-}} g(x)=6$ and $\lim _{x \rightarrow 5^{+}} g(x)=3$
- $g(5)=4$
- $g^{\prime}(x)=0$ for $x>5$


3. ( $1+1+3$ points) Upon graduating from the university and landing your first big job, you decide to reward yourself for all the hard work and purchase a brand new sports car. The price of the sports car is $\$ 45,000$. The value of the car depreciates at the rate of $37 \%$ per year. Comprehensive insurance costs $10 \%$ of the car's value each year. For parts (a) and (b) circle the best choice.
(a) The value of the sports car is an exponential function of time.
(b) The cost of the comprehensive insurance is a linear function of $V$, the value of the car.
(c) Write a function that gives the cost of the comprehensive insurance policy on the car after the $t^{\text {th }}$ year.

$$
C(t)=0.10\left(45,000(0.63)^{t}\right)
$$

