

4. (10 points) During the last century, home prices in Ann Arbor have changed a great deal. Let  $N(t)$  be the median price (in thousands of dollars) of new houses, and  $P(t)$  be the median price of previously owned houses on the market in Ann Arbor  $t$  years after the year 1900 AD. Explain the practical meaning (i.e., in terms of housing and money) of each of the following equations by rewriting as an English sentence (without the symbols  $N(t)$  and  $P(t)$ ).

(a)  $N(100) = N(80) + 101$

*The median price of new homes in Ann Arbor in the year 2000 was \$101,000 more than the median AA new home prices in 1980.*

(b)  $N(100) = 1.25P(100)$

*In the year 2000, the median price for new AA homes was 1.25 times (or 25% greater than) the median for previously-owned homes.*

(c)  $P^{-1}(100) = 80$

*In 1980 the median AA new home price was \$100,000.*

5. (10 points) The graph of  $y = f(x)$  is shown in the figure below. On the same set of axes, sketch a graph of the derivative of  $f$ .

