2. [10 points] Louis owns a small soda company and is experimenting with new flavors. Let $b(p)$ model the number of thousands of bottles of bacon-flavored soda sold by his company per month if he charges p cents per bottle. You may assume $b(p)$ is differentiable and invertible.

  a. [2 points] Give a practical interpretation of the statement $b^{-1}(8) = 150$.

  b. [3 points] Give a practical interpretation of the statement $(b^{-1})'(4) = -10$.

  c. [3 points] Write an expression that is equal to the price (in cents) that the company would have to charge per bottle in order to sell twice as many bottles of bacon-flavored soda as it sells at a price of 125 cents per bottle.

  d. [2 points] Which of the following is a correct formula for a function $h(d)$ that gives the number of thousands of bottles sold per month at a price of d dollars per bottle? (Circle your answer.)

$$h(d) = 100b(d) \qquad h(d) = \frac{b(d)}{100} \qquad h(d) = b(100d) \qquad h(d) = b\left(\frac{d}{100}\right)$$

3. [5 points] Use the limit definition of the derivative to write an explicit expression for $r'(3)$ where $r(t) = (t+5)^{2t}$. Do not simplify or evaluate the limit. Your answer should not include the letter r.

$r'(3) = $ _____