1. [13 points] Some values of the twice differentiable function $f(x)$ and of its first and second derivative are given by the following table

x	0	1	2	4	5	6	7
$f(x)$	1			4	4.3	5	
$f'(x)$			8		0.25	0.6	2
$f''(x)$	4				0.1	0.2	

Suppose the function $f(x)$ is defined and invertible for $-\infty < x < \infty$. In the following questions, you will find some of the missing values using the information given. If there is not enough information given to answer the question, write "NEI". Show your work.

a. [4 points] The function $a(x) = \ln(1 + f(x))$ satisfies $a'(2) = 2$. Find $f(2)$.

Answer: $f(2) =$ _____

b. [3 points] Let $b(x) = f(x)f'(x)$ and $b'(0) = 4$. Find $f'(0)$.

Answers: $f'(0) =$ _____

The problem continues on the next page.

For your convenience, the table with some values of $f(x)$, $f'(x)$, and $f''(x)$ has been reproduced below.

x	0	1	2	4	5	6	7
$f(x)$	1			4	4.3	5	
$f'(x)$			8		0.25	0.6	2
$f''(x)$	4				0.1	0.2	

Suppose the function $f(x)$ is defined and invertible for $-\infty < x < \infty$. Answer the following questions. If there is not enough information given to answer the question, write "NEI". Show your work.

c. [3 points] The quadratic approximation $Q(x)$ of the function $f(x)$ at $x = 1$ is $Q(x) = \frac{1}{2}x + \frac{3}{2}$. Find $f(1)$, $f'(1)$, and $f''(1)$.

Answers: $f(1) =$ _____, $f'(1) =$ _____, $f''(1) =$ _____

d. [3 points] Let $h(x) = f^{-1}(x)$. Find the value of $h'(5)$.

Answer: $h'(5) =$ _____