1. [9 points] The function $f(x)$ is invertible and twice differentiable for all real numbers. The table to the right gives several values of $f'(x)$, **the derivative of** $f(x)$. You do not need to show work in this problem, but limited partial credit may be awarded for work shown.

x	-2	0	2	3	6
$f'(x)$	6	4	3	0	2

a. Compute each of the following values **exactly**. If there is not enough information, write NEI. If the value does not exist, write DNE.

i. [2 points] $\lim_{k\to 0} \dfrac{f(-2+k)-f(-2)}{k}$

Answer: _____

ii. [2 points] Let $h(x) = 3\cos(x)f(x)$. Find $h'(0)$.

Answer: _____

iii. [2 points] Let $g(x) = f\left(\dfrac{6}{x}\right)$. Find $g'(3)$.

Answer: _____

b. [1 point] Use the table to give the best possible estimate of $f''(1)$.

Answer: $f''(1) \approx$ _____

c. [2 points] Suppose that $f(6) = 0$. Write a formula for the linear approximation $L(x)$ of $f^{-1}(x)$, **the inverse of** $f(x)$, at $x = 0$.

Answer: $L(x) =$ _____

2. [6 points] Let $P(h)$ be the current pressure, in millibars (mb), of the air above Ann Arbor at a height of h meters (m) above the ground.

Use a complete sentence to write a practical interpretation of each of the following equations.

a. [3 points] $P'(6000) = -0.05$

b. [3 points] $\displaystyle\int_0^{4000} P'(h)\,dh = -510$

