9. [11 points] Let $Q(x) = -(x - 2)^2 + 3$ be the quadratic approximation of the function $y = f(x)$ at $x = 3$. A part of the graph of $Q(x)$ is shown below.

![Graph of Q(x)]

a. [6 points] If possible, find the following quantities exactly. If there is not enough information to obtain an exact answer, write “NEI”.

\[
\begin{align*}
    f''(3) &= \underline{\text{__________}}, & f'''(3) &= \underline{\text{__________}}, & f(0) &= \underline{\text{__________}}, \\
    Q''(3) &= \underline{\text{__________}}, & Q'''(3) &= \underline{\text{__________}}, & Q(0) &= \underline{\text{__________}}.
\end{align*}
\]

b. [4 points] Assume that the function $f(x)$ is invertible and let $g(y) = f^{-1}(y)$ be its inverse. Given that $f(3) = 2$, find the linear approximation $L(y)$ of $g(y)$ at $y = 2$. Your answer should not include the letters $f$ or $g$. Show all your work.

Answer: $L(y) =$


c. [1 point] Use the linear approximation $L(y)$ to approximate a solution to the equation $f(x) = 1.7$.

Answer: ________________