1. [13 points] The graph of a portion of a function \( y = h(x) \) is shown below. Note that the graph is linear where it appears to be linear, including on the intervals \([7, 8]\) and \([10, 11)\).

\[
\begin{array}{c}
\text{Graph of } y = h(x) \\
\text{with points at } (1, 2), (3, 4), (5, 1), (6, 3), (8, 2), (9, 1), (10, 0), (11, -1)
\end{array}
\]

a. [2 points] At which of the following points \( p \) is \( h(x) \) not continuous at \( x = p \)? Circle all such values.

\[\text{Solution:} \quad p = -1, \quad p = 1, \quad p = 2, \quad p = 4, \quad p = 5 \quad \text{NONE OF THESE}\]

b. [2 points] For which of the following values \( a \) is \( \lim_{x \to a^+} h(x) = h(a) \)? Circle all such values.

\[\text{Solution:} \quad a = -1, \quad a = 2, \quad a = 4, \quad a = 5, \quad a = 6 \quad \text{NONE OF THESE}\]

For parts c.–e., find the exact value of each of the expressions. If the value does not exist, write DNE. If there is not enough information, write NI.

c. [2 points] Calculate the average value of \( h(x) \) on the interval \([-1, 1]\).

\[\text{Solution:} \quad \frac{1}{1 - (-1)} \int_{-1}^{1} h(x) \, dx = \frac{1}{2} \int_{-1}^{1} h(x) \, dx = \frac{1}{2}(-3) = -1.5.\]
\[\text{Answer= -1.5.}\]

d. [4 points] Suppose \( g(x) = h(3h(x)) \). Calculate \( g'(1.5) \). Show all your computations to receive full credit.

\[\text{Solution:} \quad g'(x) = h'(3h(x))(3h(x))' = 3h'(3h(x))h'(x).\]
Then \( g'(1.5) = 3h'(3h(1.5))h'(1.5) = 3h'(3(1.5))(2) = 6h'(3) = 6(-1) = -6\)
\[\text{Answer= -6.}\]

e. [3 points] Calculate \( \int_{7.5}^{10.5} h''(x) \, dx \).

\[\text{Solution:} \quad \text{Using the Fundamental Theorem of Calculus we obtain}\]
\[\int_{7.5}^{10.5} h''(x) \, dx = h'(10.5) - h'(7.5) = (-2) - (2) = -4.\]
\[\text{Answer= -4.}\]