6. [4 points] The graph of the function $f(x)$ is shown below. Note that $f(x)$ has a vertical tangent line at $x=5$.

a. [2 points] On which of the following intervals does the function $f(x)$ satisfy the hypotheses of the Mean Value Theorem? Circle the correct answer(s).
[0,2]
[1,3]
[2,4]
[3,5]
NONE OF THESE
b. [2 points] On the interval $[8,12]$ the hypotheses of the Mean Value Theorem are true for the function $f(x)$. What does the conclusion of this theorem say in this interval?
Answer:
7. [5 points]

Yi is constructing a cardboard box. The base of the box will be a square of width $w$ inches. The height of the box will be $h$ inches. Yi will use gray cardboard for the sides of the box and brown cardboard for the bottom (the box does not have a top). Gray cardboard costs $\$ 0.05$ per square inch, while brown cardboard costs $\$ 0.03$ per square inch. Yi wants to spend $\$ 20$ on the cardboard for his box.

Write a formula for $h$ in terms of $w$.


Answer: $h=$ $\qquad$

