Lecture Questions III: 110.106 Calculus I (Bio & Soc Sci)

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Question 1

Determine the truth of the following two statements:

(1) An inflection point can sometimes be a local max or local min.

(2) It is possible for a function to be concave down on all of $\mathbb{R}$ and have two distinct horizontal asymptotes.

A. Both are true.

B. (1) is true and (2) is false.

C. (1) is false and (2) is true.

D. Both are false.

Question 2

Match $f(x)$ and its first two derivatives with the graphs by color:
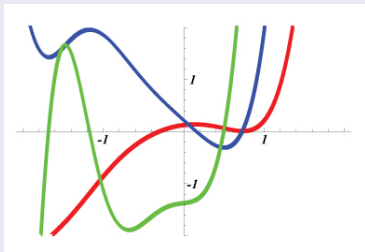
A. $f(x)$, $f'(x)$, and $f''(x)$.

B. $f(x)$, $f'(x)$, and $f''(x)$.

C. $f(x)$, $f'(x)$, and $f''(x)$.

D. $f(x)$, $f'(x)$, and $f''(x)$.

E. $f(x)$, $f'(x)$, and $f''(x)$.

Question 3

Recall that the Mean Value Theorem states that the point $c \in (2, 10)$ in the question below must exist.

Let $g(x) = \sqrt{2x - 4}$, on the interval $2 \leq x \leq 10$. Find a point $x = c$ where the instantaneous rate of change of g at c is equal to the average rate of change of g on the entire interval $[2, 10]$.

A. $c = 2.5$.

B. $c = 3.75$.

C. $c = 4$.

D. $c = 8$.

E. The value of c is none of these.