AP Calculus

Homework Day 62 MVT

Name _____ Date _____

1. Given $f(x) = 9 - \left(\frac{14}{x}\right)$, find all c in the interval $(2, 7)$ such that $f'(c) = \frac{f(7) - f(2)}{7 - 2}$.

a) $\frac{9}{2}$ b) $\pm\sqrt{14}$ c) $\sqrt{14}$

d) $\frac{14}{9}$ e) $\frac{2\sqrt{14}}{3}$

2. Given the function $f(x) = x(x^2 - 8) - 5$ satisfies the hypothesis of the Mean Value Theorem on the interval $[1, 4]$, find a number C in the interval $(1, 4)$ which satisfies this theorem.

a) $\sqrt{5}$ b) $\sqrt{7}$ c) 12 d) 7 e) 5

3. Find a number C in the interval $[1, 5]$ that satisfies the hypothesis of the Mean Value Theorem, if $f(x) = 4 + (x - 1)^{1/2}$.

a) 1 b) 2 c) 3 d) 4 e) 6

4. Which of the following functions does not satisfy the conditions of the Mean Value Theorem on $[1, 5]$?

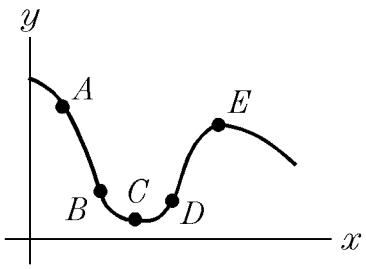
a) $f(x) = |x| - 2$ b) $f(x) = \sqrt{x + 2}$

c) $f(x) = |x - 2|$ d) $f(x) = (x - 2)^2$

e) $f(x) = x^2 - 2x$

5. Tony drives out to the lake in 3 hours. If he covered 250 km, explain why he should get a speeding ticket if the speed limit is 80 km/h.

6. At which of the five points shown on the graph is $\frac{d^2y}{dx^2}$ positive? Choose the *best* answer.



a) A and E b) B and D

c) C only d) B, C, and D

e) E only

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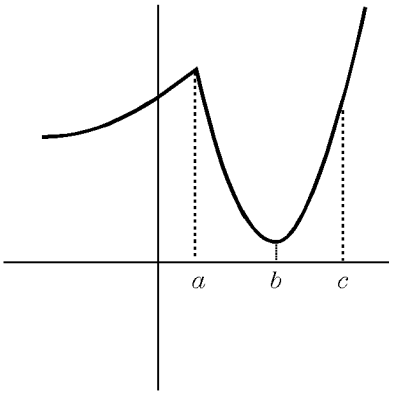
7.



Which of the following tables best goes with the graph of f shown?

a)

x	$f'(x)$
a	0
b	0
c	4

b)

x	$f'(x)$
a	0
b	0
c	-2

c)

x	$f'(x)$
a	does not exist
b	0
c	6.2

d)

x	$f'(x)$
a	does not exist
b	does not exist
c	-1

8. At which of the five points shown on the graph is $\frac{dy}{dx}$ negative? Choose the *best* answer.

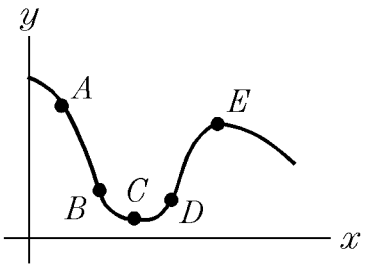
a) A and B

b) B only

c) C only

d) C, D, and E

e) D only



9. Let $f(x) = x^2(x+9)$. Over what interval is the function decreasing?

a) $0 < x < 6$

b) $-6 < x < 0$

c) $0 < x < \infty$

d) $-\infty < x < \infty$

e) $-\infty < x < -6$ and $x > 0$

10. Given a continuous function f and the following information:

Interval	Sign of f'	Sign of f''
$x < 1$	$-$	$+$
$1 < x < 5$	$+$	$+$
$5 < x < 7$	$+$	$-$
$7 < x$	$-$	$-$

Sketch a possible graph of f.

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1.
Answer: c
CodePath: EAS.APC.D.G.1

2.
Answer: b
CodePath: EAS.APC.D.G.5

3.
Answer: b
CodePath: EAS.APC.D.G.8

4.
Answer: c
CodePath: EAS.APC.D.G.11

5.
Answer:
CodePath: EAS.APC.D.G.31

6.
Answer: d
CodePath: EAS.APC.D.D.5

7.
Answer: c
CodePath: EAS.APC.D.D.17

8.
Answer: a
CodePath: EAS.APC.D.D.4

9.
Answer: b
CodePath: EAS.APC.D.E.8

10.
Answer:
CodePath: EAS.APC.D.J.56