2.3 Differentiability

Calculus Name: _____ **CA #1**

Given $f(x)$ and $f'(x)$ on a given interval $[a, b]$, find a value c that satisfies the Mean Value Theorem.

1. $f(x) = -\frac{x^2}{2} - x + \frac{11}{2};\ [-1, 3]$
   $f'(x) = -x - 1$

2. $f(x) = 5 - \frac{4}{x};\ [1, 4]$
   $f'(x) = \frac{4}{x^2}$

3. $f(x) = x(x^2 - x - 2);\ [-1, 1]$
   $f'(x) = 3x^2 - 2x - 2$

4. $f(x) = 3x^2 - 2;\ [2, 3]$
   $f'(x) = 6x$

5. $f(x) = \sin x - \cos x;\ [0, 2\pi]$
   $f'(x) = \cos x + \sin x$

6. $f(x) = \frac{x+2}{x};\ [\frac{1}{2}, 2]$
   $f'(x) = -\frac{2}{x^2}$

Using a calculator find the value of the derivative at a given point. DON'T show any work. You should be able to quickly find the answer with a calculator.

7. $f(x) = -2x^2 + 4x$

   $f'(-3.7) =$

8. $f(x) = \sec 3x$

   $f'\left(\frac{\pi}{9}\right) =$

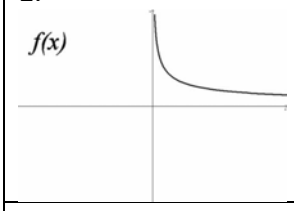
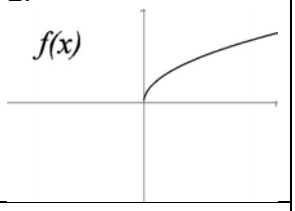
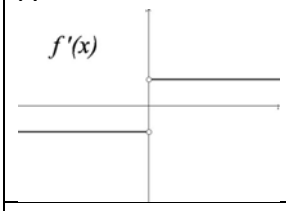
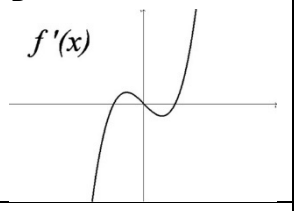
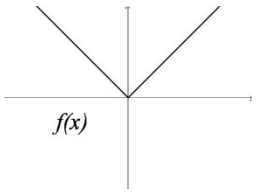
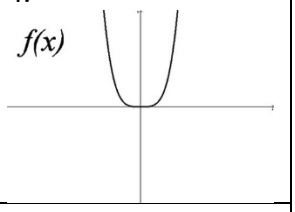
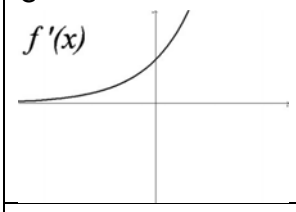
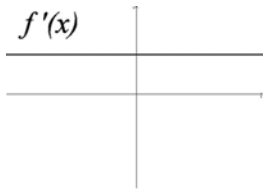
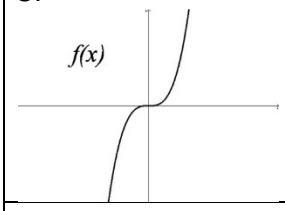
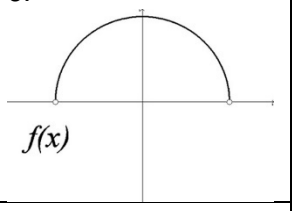
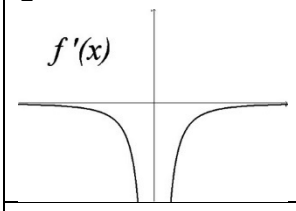
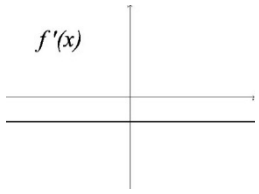
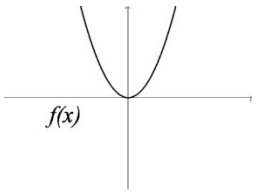
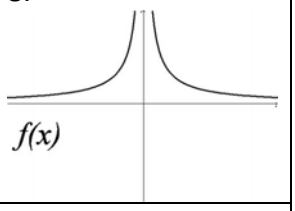
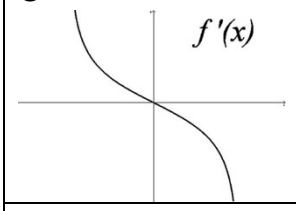
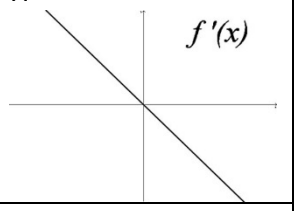
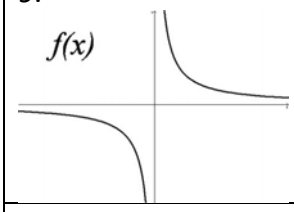
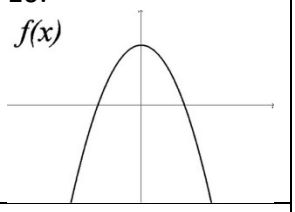
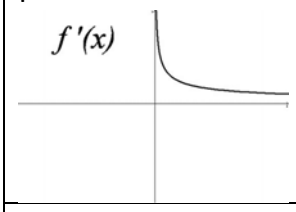
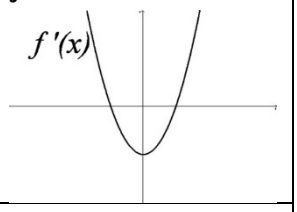
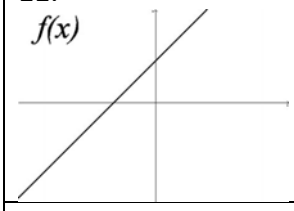
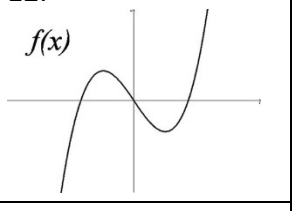
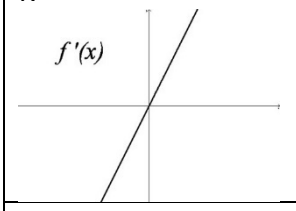
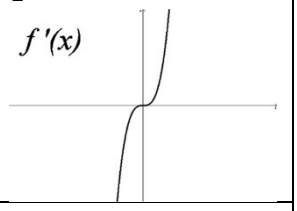
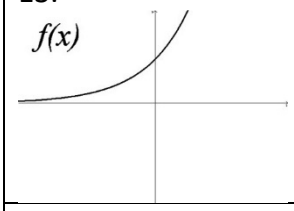
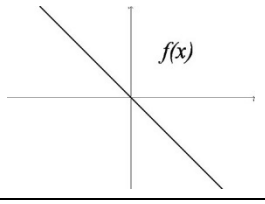
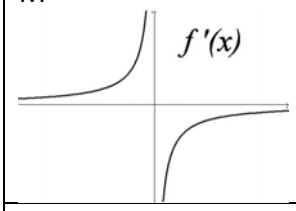
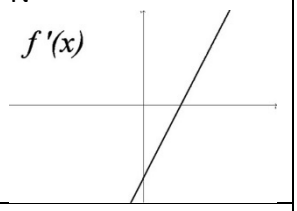
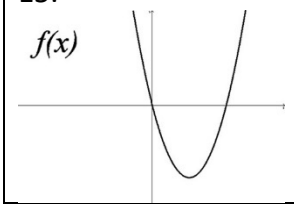
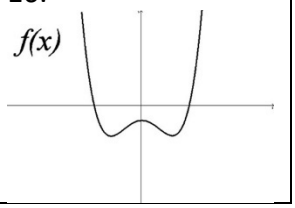
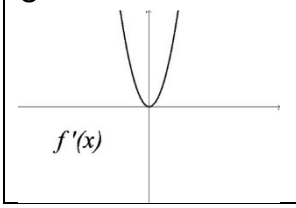
9. $f(x) = \frac{1}{\ln x}$

   $f'(1.45) =$

Answers to 2.3 CA #1

1. 1	2. 2	3. 1 and $-\frac{1}{3}$	4. $\frac{5}{2}$	5. $\frac{3\pi}{4}$ and $\frac{7\pi}{4}$	6. 1	7. 18.8	8. 10.392	9. -4.995
MATCHING: 1p, 2i, 3a, 4l, 5o, 6g, 7k, 8m, 9e, 10h, 11d, 12j, 13c, 14f, 15n, 16b.								

Match each function with the graph of its derivative.

Function			Derivative	
1. 	2. 	1. _____ 2. _____	A 	B 
3. 	4. 	3. _____ 4. _____	C 	D 
5. 	6. 	5. _____ 6. _____	E 	F 
7. 	8. 	7. _____ 8. _____	G 	H 
9. 	10. 	9. _____ 10. _____	I 	J 
11. 	12. 	11. _____ 12. _____	K 	L 
13. 	14. 	13. _____ 14. _____	M 	N 
15. 	16. 	15. _____ 16. _____	O 	P