MATH 2413 QUIZ #1ne
FALL 2023 EGLEY

PRINTNAMEHERE REGIS

PHONES OFF!

FOR EACH OF THE FOLLOWING, FOLLOW THESE DIRECTIONS

1. SHOW ALL YOUR WORK IN THE SPACE PROVIDED.
2. IF YOU DO NOT SHOW YOUR WORK IN A NEAT AND ORDERLY FASHION, OR IF YOU DO NOT FOLLOW DIRECTIONS, YOU FORFEIT YOUR CLAIM TO ANY CREDIT.
0. THE FINAL EXAM FOR THIS CLASS IS **1:00 WEDNESDAY, DEC 13**. WHEN IS THE FINAL FOR THIS CLASS?
WRITE YOUR REPLY HERE →
→

DRAW A BOX AROUND YOUR FINAL RESULTS.

I. FIND THE DERIVATIVE OF EACH FUNCTION. YOU NEED NOT SIMPLIFY YOUR RESULT (IN FACT I'D RATHER PREFER IT IF YOU DIDN'T).

1. $f(x) = \tan(x) - \sec(x)$

$\Rightarrow f'(x) = \sec^2(x) - \sec(x)\tan(x)$

2. $f(x) = \sqrt{x} + \dfrac{1}{\sqrt[3]{x}}$

Rewrite:

$f(x) = x^{1/2} + x^{-1/3}$

$\Rightarrow f'(x) = \frac{1}{2}x^{-\frac{1}{2}} - \frac{1}{3}x^{-\frac{4}{3}}$

3. $f(x) = \dfrac{1}{x^2} - 4\sqrt{x} + 6\sqrt[3]{x}$

Rewrite:

$f(x) = x^{-2} - 4x^{1/2} + 6x^{1/3}$

$\Rightarrow f'(x) = -2x^{-3} - 2x^{-1/2} + 2x^{-2/3}$

4. $f(x) = \sin(3x^2)$

$f'(x) = \cos(3x^2)(6x)$

5. $f(x) = 4\cot(x)\sec(x)$

$\Rightarrow f'(x) = (4\cot(x))(\sec(x)\tan(x)) + (\sec(x))(-4\csc^2(x))$

6. $f(x) = \dfrac{1}{(2x^2+5x)^3}$

$\Rightarrow f'(x) = \dfrac{(2x^2+5x)^3(0) - (1)(3(2x^2+5x)^2(4x+5))}{((2x^2+5x)^3)^2}$

OR

Rewrite

$\Rightarrow f(x) = (2x^2+5x)^{-3}$

$\Rightarrow f'(x) = -3(2x^2+5x)^{-4}(4x+5)$

7. $f(x)=\dfrac{\cos(x)}{x^2}$

Note: For this item, you are specifically instructed to use the quotient rule, and NOT to simplify your final result.

$$\Rightarrow f'(x)=\frac{(x^2)(-\sin(x))-(\cos(x))(2x)}{(x^2)^2}$$

8. $f(x)=-x\csc(x)-\cos(5x)$

$$\Rightarrow f'(x)=(-x)(-\csc(x)\cot(x))+(\csc(x))(-x)-(-\sin(5x))(5)$$

9. $f(x) = (3x^2 + x)\tan(6x)$

$f'(x) = (3x^2+x)(\sec^2(6x)(6)) + (\tan(6x))(6x+1)$

10. $f(x) = \left(\frac{\cos(x)}{3x+2}\right)^3$

$f'(x) = 3\left(\frac{\cos(x)}{(3x+2)}\right)^2 \left(\frac{(3x+2)(-\sin(x)) + (\cos(x))(3)}{(3x+2)^2}\right)$